

Language Loss among Native Speakers  
of Moroccan Arabic in the Netherlands

Abderrahman El Aissati



# Language Loss among Native Speakers of Moroccan Arabic in the Netherlands

Aissati, Abderrahman El

Language loss among native speakers of Moroccan Arabic in  
the Netherlands / Abderrahman El Aissati. - [S.l. : s.n.]

Proefschrift Katholieke Universiteit Nijmegen. - Met lit. opg.

ISBN 90-9009462-8

NUGI 941

Trefw.: taalverlies / tweetaligheid / Arabische taal ;

Marokkanen ; Nederland.

© Abderrahman El Aissati, Nijmegen.



Language Loss  
among Native Speakers of Moroccan Arabic  
in the Netherlands

Een wetenschappelijke proeve op het gebied van de Letteren

Proefschrift

ter verkrijging van de graad van doctor  
aan de Katholieke Universiteit Nijmegen,  
volgens besluit van het College van Decanen  
in het openbaar te verdedigen op  
dinsdag 7 mei 1996,  
des namiddags om 3.30 uur precies

door

Abderrahman El Aissati

geboren in 1960 te Midar

**Promotores:**

**Prof. dr. C.L.J. de Bot**

**Prof. dr. C.H.M. Versteegh**

**Manuscript-  
commissie:**

**Dr. T.C.G. Bongaerts (voorzitter)**

**Prof. dr. A.A.J.G. Extra (KUB)**

**Dr. A.C.J. de Ruiter (KUB)**

## Acknowledgements

The research project which this book reports on was carried out at the Department of Applied Linguistics and Research Methodology of the University of Nijmegen. It has benefited from the help of a number of individuals and institutions.

This research was made possible as part of the "Zwaartepuntprogramma," a project on language and minorities funded by the NWO, the University of Nijmegen, and the University of Tilburg.

I thank my supervisors Kees de Bot and Kees Versteegh for their support and guidance during the ups and downs I went through in research land.

My colleague Anneli Schaufeli, working on the Turkish part of the project, was always ready to step over to the Moroccan Arabic part whenever her help was needed. Thanks go also to Erik Schils, who has never rejected any of my hypotheses, except when statistics forced him to do so. I am grateful to Riet Evers for her patient and calm approach to research, and to Anne-Mieke Janssen-van Dieten for insightful comments and thought-provoking discussion. I also thank Theo Bongaerts and everyone in TTW for their support and encouragement. I am grateful to my teachers of the Center for Language Studies (CLS) for the courses I attended which greatly benefited my work.

I thank all the 55 participants in this research, and the contact persons at the following schools which I visited during data collection; in Nijmegen: SSGN, de Klokkenberg, de Sprong, and Canisius MAVO; in Morocco: College Waliyyu Al Ahd (Tangier), College Al Wahda (Oujda), and College Al Mustaqbal (Casablanca).

Five and a half years ago I came to the Netherlands on a ten-month scholarship from the NUFFIC foundation. I thank Guus Extra and Jan Jaap de Ruiter of the University of Tilburg for their guidance during those months, and for informing me of the existence of this project.

To my friends and family, both here and in Morocco, go special thanks. Without their support I would not have been able to pursue my studies thus far.

I thank my wife Rosy for encouraging me in all I do.





# Contents

<b>Introduction</b>	<b>1</b>
<b>Chapter 1: Theoretical considerations in the study of language loss</b>	
0. Introduction	3
1. Key terms in language attrition and language shift	3
1.1 Language attrition	3
1.2 Language loss	5
1.3 Language shift	5
1.4 The environment of language loss	7
2. The relation of language loss to language acquisition, language change, and pidginization	8
2.1 Language acquisition	9
2.2 Language change	10
2.3 Pidginization	10
3. Aspects of language loss	11
3.1 Linguistic features	12
3.2 Extra-linguistic aspects of language loss	18
3.3 How does language loss occur?	18
4. Methodological issues in language loss research	20
4.1 Language shift	20
4.2 Language attrition	21
4.3 Methodology of the present study	22
<b>Chapter 2: Language choice, language proficiency, and language shift</b>	
0. Introduction	27
1. The sociolinguistics of MA	27
1.1 MA and other languages in Morocco	28
1.2 MA in the Netherlands	34
2. The background of the participants	39
2.1 The experimental group	39
2.2 The control group	42
3. Language choice	42
4. Language proficiency	47
5. Language use, language proficiency and language shift	56
6. Conclusion	58

## **Chapter 3: Plural formation in MA**

0. Introduction	61
1. Plural formation in MA	62
1.1 Sound plurals	63
1.2 Broken Plurals	64
2. Plural formation test	66
2.1 Participants and procedure	66
2.2 The test	66
3. Results	68
4. Discussion	72
5. Conclusion	76

## **Chapter 4: Sentence Processing in MA**

0. Introduction:	77
1. Cue validity studies on Dutch and MA: a review of the literature	77
1.1 Cues in Dutch	80
1.2 Cues in Arabic	82
1.3 Cue validity, bilingualism, and language loss	82
2. Cues in MA and Dutch	84
3. The cue validity experiment	88
3.1 Design	88
3.2 Material, participants, and procedure	89
4. Results	92
5. Discussion	100
6. Conclusion	103

## **Chapter 5: Phonological aspects of language loss**

0. Introduction	107
1. A sketch of the phonology of MA and Dutch	107
1.1 The phonological inventory of MA	107
1.2 The phonological inventory of Dutch	108
1.3 A comparison between MA and Dutch phonological inventories	109
1.4 The syllable structure	111
1.4.1 The syllable structure of MA	111
1.4.2 The syllable structure of Dutch	112
1.5 Gemination	113
2. Perception of phonological oppositions	114
2.1 Participants, material, design and procedure	115
2.2 Results	116
3. Production	119
3.1 Sound substitution	120
3.2 Geminate reduction and syllable structure	125
3.3 Frequent insertion of pauses	129
4. Conclusion	130

<b>Chapter 6: The perception and production of relative clauses</b>	
0. Introduction	131
1. Relative clauses: an overview	131
1.1 The structure of relative clauses	131
1.2 Perception of relative clauses	132
2. Relative clauses in MA	135
3. An experiment on the perception of relative clauses in MA	136
3.1 Results	137
3.2 Discussion	140
4. Production of relative clauses in MA	147
5. Conclusion	151
 <b>Chapter 7: Conclusions</b>	 153
1. Summary of results	153
2. Is there any language loss in MA?	155
3. Avenues for future research	158
 <b>References</b>	 161
 <b>Appendix 1</b>	 171
 <b>Appendix 2</b>	 181
 <b>Appendix 3</b>	 191
 <b>Appendix 4</b>	 195
 <b>Appendix 5</b>	 207
 <b>Dutch summary</b>	 209
 <b>Curriculum Vitae</b>	 213





# Introduction

This dissertation is about the function and structure of Moroccan Arabic (henceforth MA) as used by second generation adolescents of Moroccan origin in the Netherlands. By looking at the function of MA as a minority language in the Netherlands, we attempt to answer the question of whether there is any language shift from MA to Dutch, the majority language. A series of tests and experiments are conducted with the goal of examining the command of second generation adolescents of various linguistic skills in MA. In doing this, we try to bring to the surface any signs of attrition in these skills.

The organization of the present work is as follows. Chapter 1 deals with the theoretical background of the study. The following central issues are tackled here. First, a definition of the different key terms like 'loss', 'shift', and 'attrition' in studies on languages in contact is attempted, and the meaning of these terms in this study is defined. Second, since MA in the Netherlands is a case of language contact, a review of studies on languages in contact is given, and a number of similarities between this line of research and research on language contact are noted. Third, the linguistic skills reported to be prone to attrition in the literature are examined. A selection of these skills is made so as to cover the different grammar components, namely semantics and the lexicon, phonology, morphology, syntax, and discourse. The fourth issue covered in this chapter is the process of language loss, i.e. how language attrition and language shift occur. Finally, the methodology of the present work will be presented, together with a discussion of the main methodological concerns in language loss in general.

The question of whether there is any language shift from MA to Dutch is the core of chapter 2. Data on language choice, language use, and language proficiency are presented to substantiate the claim that there are signs of language shift from MA to Dutch. Before presenting these data, some information on the sociolinguistics of MA in Morocco and in the Netherlands is provided, together with information on the background of the participants in the present work.

Chapter 3 deals with plural formation. Its goal is to show how the morphology of MA is affected by comparing plural formation strategies in second generation adolescents with those of adolescent native speakers of MA in Morocco. The different strategies used by second generation adolescents to deal with plural formation are examined, with particular attention to the role of language proficiency in shaping these strategies.

## 2 Introduction

Chapter 4 is about processing strategies in MA. The bulk of this chapter is an analysis of the use of linguistic cues in interpreting the agent of an action in a sentence. The following cues are dealt with: animacy, number agreement between subject and verb, word order, and stress. The chapter attempts to answer the question of whether second generation adolescents deal with these linguistic cues in a different way than do Moroccan adolescents in Morocco, and if so, what the reasons for any difference might be.

Chapter 5 is devoted to the phonology of MA. Perception and production in the phonology of MA are analyzed, and a comparison is made between the second generation adolescents and the control group in Morocco. Just as in the previous chapters, this comparison is made to see if there are any differences between the two groups, and to analyze these differences in light of findings about phonological systems in language loss research.

The subject of chapter 6 is the processing of complex sentences in MA. The central question in this chapter is how different or similar are the two groups of Moroccan adolescents regarding the way they process complex sentences. In particular, the chapter concentrates on the role of the function of a head noun and word order in the main clause and the relative clause in the processing of complex sentences.

Chapter 7 sums up the findings of the present study, explains its limitations and implications, and puts forth a number of suggestions for future research.

# **Chapter 1**

## **Theoretical considerations in the study of language loss**

### **0. Introduction**

This chapter aims at outlining the general theoretical background of research on language loss,<sup>1</sup> and at providing an account of the methodology adopted for the present work in particular. In section one, key terms in studies on language loss will be explained, and the terminology used in the present work will be defined. Section two deals with the relationship of language loss to various aspects of language acquisition, language change, and pidginization. Section three provides an inventory of linguistic aspects previously investigated in the literature and hypothesized to be prone to loss. More detailed accounts of specific aspects of studies directly relevant to the present one will be found in chapters dealing with those aspects. Finally, section four gives an account of the methodology adopted in the study of language loss in general, and presents the methodology of the present work.

### **1. Key terms in language attrition and language shift studies**

#### **1.1 Language attrition**

The term 'language attrition' has been used in the literature in at least two different ways, as a general term and as a specific term. Attrition in the first sense has been used as a cover term to refer to phenomena that have to do with any kind of decline in language skills at the level of individuals, and/or any change in language habits at the level of a community of speakers. Among the examples of the use of 'attrition' in this general sense are the following. Freed (1982: 1) defines language attrition as referring to the following phenomena: 1) the loss of any language or any portion of a language by an individual or a speech community; 2) the declining use of mother tongue skills by those in bilingual situations or among ethnic minorities in (some) language contact situations where one language, for political or social reasons, comes to replace another; 3) the deterioration of language skills

---

<sup>1</sup>The term language loss is used here in a general sense, to refer to all phenomena of language change, decay, shift, etc. A discussion of these terms is given below.

in neurologically impaired patients; 4) the decline of certain types of language usage by the elderly; 5) the death of an entire language, and finally 6) the loss of language skills by those who have studied and then discontinued the use of a second language.

Another example of this general definition of language attrition is given in Andersen (1982: 86), where the term language attrition is used as a cover term that includes "language death, language loss, weakening of a competence in a language, forgetting a language, difficulty in recalling parts of a language, and similar phenomena." Under this definition, as well as that of Freed given above, loss of language skills is one case of language attrition.

'Language attrition' has also been used in a more specific sense, namely that of erosion of linguistic skills at the level of individual speakers. For example, Seliger (1985: 4) uses language attrition to refer to 'erosion' of language skills at the level of performance, and specifies that these skills should have been fully acquired and used by a given speaker before the onset of attrition. Oxford (1982: 120) refers to language skill attrition as loss of proficiency in one or more of the skills of writing, reading, understanding, or speaking in a first or second language, thus also specifying performance as the level of language attrition.

In the present study we will be using the term 'attrition' to refer to phenomena indicating a deviation of a speaker, or of a language feature from a certain norm. This norm will be defined by reference to a control group, which is supposed to have a full command of MA. In other words, language attrition here, although it might suggest a process of change in the history of a language, will be used to describe a state of affairs, whereby some linguistic features can be spoken of as 'deviant' from a norm. A first question that begs itself here is the legitimacy of taking MA in Morocco as the norm against which to compare MA in the Netherlands. In other words, why not consider MA in The Netherlands as an autonomous language variety? The main argument against considering MA in the Netherlands as an autonomous variety is that the 'deviant' linguistic features are usually, attested in the language of speakers with a low proficiency in MA. If they were independent of a language loss situation, one would expect them to occur independently of language proficiency, i.e. not to be so correlated with low proficiency.



## 1.2 Language loss

In a similar way to the term 'language attrition', the term 'language loss' has been used in both a wide and a restrictive sense. An example of its use in the first sense can be found in Jaspaert and Kroon (1989: 80) who refer to language loss as 'a form of language change that causes potential communication problems between individuals and the community of which they consider themselves a member.' Thus, if an individual does not know a language well enough, he or she will definitely run into communication problems with members of the community to which that individual belongs.

'Language loss' has also been used in a very restrictive sense to refer to a change in the linguistic history of a speaker, whereby a linguistic feature that was acquired at an earlier stage is lost at a subsequent stage. For example, Jaspaert, Kroon and van Hout (1986: 38) describe language loss as "a negative change in the level of language skills over time." Negative change is defined as the attrition of a previously acquired (positive) language skill (Oxford 1982: 132)). Lambert (1982: 6) gives a similar definition of language loss. He defines loss of a linguistic feature as follows: "If a language feature is known at moment  $X_i$ , but not any more at moment  $X_i+1$ , that feature is said to be lost in the period  $(X_i, X_i+1)$ ."

We will be using the term 'language loss' as a cover term to refer to any phenomenon related to a decline in language skills at the level of the individual speaker, to the deviation of a speaker from a norm, as well as to any change indicating loss of functions that a language serves in a community. Thus, in our definition of 'language loss' language attrition in its restrictive sense, and language shift are included. We turn now to the latter term in order to complete our definitions. We will leave aside, for now, the thorny issue of determining the meaning of 'losing' a linguistic feature, and whether there is such a thing to start with. This will be taken up in section 2 about the relation of language loss to language acquisition, language change, and pidginization.

## 1.3 Language shift

There seems to be more consensus about the meaning of 'language shift' than about the meaning of the previously defined key terms, i.e. 'attrition' and 'loss'. Dorian (1982: 44), for example, states that language shift occurs when a language used by a community is replaced by another, usually, more powerful or more prestigious language. This replacement can take place in the homeland of the receding language (the indigenous minority language), or in a context where there is a

different language spoken as a first language, where it then becomes 'the transplanted immigrant language'. In the first case, such replacement can happen as a result of territorial occupation, economic necessities, etc. In both cases, the dominant language takes over functions that were assumed by the dominated language. This gradual displacement of one language by another is what defines language shift.

Mougeon and Beniak (1991: 2) regard language shift as a consequence of restriction in domains of use of a minority language, and in particular when a majority language is used in most domains, including the home. In such a case, the minority language will have an 'uncompartmentalized' use, i.e., it will not be used consistently in any domain. Language shift may occur in this situation because of lack of specialized contexts for its use. They point out that speakers of a minority language which is confined to some domains, i.e. a language with a 'compartmentalized' use, where it is expected, like the home, may not necessarily be undergoing a language shift.

Along similar lines, de Bot and Weltens (1991: 42) note that mother tongue shift occurs in a bilingual community, with competing languages, where the position of the languages used in that community is unstable. They explain that, in contexts of indigenous languages, such a shift situation is initially triggered by a domain shift where one language is introduced into domains that were previously reserved for another language, resulting in the takeover of one language in subsequent generations. The language that takes over becomes the dominant language of the community, and the language which is receding becomes the dominated one. Another definition which considers the actual use of language in given contexts as central to the concept of language shift is given by Weinreich (1966: 68) who describes language shift in terms of "a change in the habitual use of one language to that of another."

According to Gonzo and Saltarelli (1983: 188), language shift does not have to be preceded by a reduction in functions and domains of use. They explain that weak monitoring might eventually lead the minority language to change in the direction of simplification until it ultimately dies, in the course of a few generations. This intergenerational dimension of language shift is also emphasized in other works on language loss (e.g. Weltens 1987, Lambert 1989, van Els and Weltens 1989, and de Bot and Weltens 1991). In these works, language shift is seen as a between-generations process, rather than as a within individuals phenomenon.

Clyne (1991: 54) gives an idea about the ambiguity of the term language shift. He explains that the source of the ambiguity can be found at the level of language as well as at the level of a speech community that uses the language. In this way, it can designate a language undergoing the process of shifting, as well as a language that has stopped being used. More interesting, perhaps, is Clyne's perception of language shift as occurring at the level of one or more, and not necessarily all, domains where a language was used. Moreover, in his view, language shift occurs at the societal level as well as at the level of the individual speaker.

The views and definitions of language shift that we have seen in this section converge towards the idea that language shift is a process, completed or not, of replacement of a language by another language. This replacement can occur at the level of one or more domains, such as work, home, and school. It can have individual speakers or a whole speech community as a locus.

In the present work, the term 'shift' will be used to refer to a change in the domains where a language functions, regardless of whether this change has affected the whole community or a few individuals. Thus, an individual or community will be undergoing language shift from language A to language B, if language A ceases to be used by this individual or community in one or more domains where it becomes replaced by language B.

Under language shift we also include language death. The main difference between language shift and language death is that in the former case, a language continues to exist, usually somewhere else than where it has lost its speakers, whereas in the latter case a language simply ceases to be used. Essentially, then, the processes that result in either situation are not the distinguishing characteristic of the two types of language change, but the end result. The term 'shift' will be further elaborated on in chapter 2, where the linguistic and sociolinguistic profile of the participants in the present investigation are analyzed.

#### **1.4 The environment of language loss**

In addition to the terms discussed above, it is necessary to say a few words about terms that refer to languages in contact, where one can speak of language loss. We will discuss the different terms used to refer to competing languages, such as a 'strong' vs. 'weak', 'dominant' vs. 'dominated', etc. Andersen (1982) refers to a language that a bilingual masters most as 'stronger', and the one mastered less as 'weaker'. These two terms should not be confused with L1 and L2. It is not uncommon to find speakers who have a better command of their second language than of their first language. Weinreich (1966: 76) makes an insightful distinction

between a primary language and a secondary language: a primary language is the one mastered best, which is usually, but not always, the mother tongue. In the case of a number of immigrants in the United States, English has become their primary language although it was learned after their mother tongue.

The terms 'dominant' and 'dominated' have been used to refer to the language of the majority, usually the host community or the more powerful community, and to the language of the minority, usually the immigrant community respectively. We will be using these terms in the same way. Thus, the dominant language for the Moroccan community living in the Netherlands is Dutch, even if many members have little knowledge of this language, and Moroccan Arabic is the dominated language. The term 'stronger' will be used in the rest of this chapter in the sense of 'a language which a speaker feels he can express himself better' and the term 'weaker' to refer to 'a language which the speaker does not feel he speaks best'.

A useful classification of language loss situations based on the function of the languages involved in such situations is that of de Bot and Weltens (1984: 51). They provide the following categorization of types of attrition in terms of which language undergoes attrition and where. Thus, we find:

1. Loss of L1 in an L1 environment (e.g. dialect loss within the dialect community).
2. Loss of an L1 in an L2 environment (e.g. loss of native languages by migrant workers).
3. Loss of an L2 in an L1 environment (e.g. foreign language loss).
4. Loss of an L2 in an L2 environment (e.g. second language loss by aging migrants).

The phenomena discussed in the present work will pertain to category 2, i.e. loss of L1 in an L2 environment. The use of L1 here to refer to MA in the Netherlands should not imply that it is the stronger language of Moroccan adolescents. We will come back to this issue during the discussion of language proficiency and language use in chapter 2.

## **2. The relation of language loss to language acquisition, language change, and pidginization**

In the section above we have tried to clarify the terminology used in the field of language loss studies, as well as to define the terms that will be used in the present work. Additional terms and concepts still need to be clarified. Some of these which we propose to look at have to do with analogies between language loss and other areas of language research. These analogies have a bearing on language acquisition, language change, and pidginization. Before proceeding to look at each



of these analogies, we would like to cite an example of a study that makes explicit the relationship between the analogies in question. Gonzo and Saltarelli (1983) contributed to the volume: *Pidginization and Creolization as Language Acquisition*, edited by Andersen, with an article entitled "Pidginization and linguistic change in emigrant languages." They state that the aim of their research is to gain insight into and to better understand "the phenomenon that has led to the seemingly inevitable fading and disappearance of emigrant languages" (p.181). In the same article, they explain that their theoretical goal is "a contribution toward the definition of language loss in general." In other words, Gonzo and Saltarelli deal with the process of language shift through an account of pidginization and language change that the emigrant language undergoes. In doing this, as they state in their own words, they are also contributing to understanding language loss in general.

## 2.1 Language acquisition

Studying the acquisition of a dominated language, which usually has a low prestige and is threatened by a dominant language, can be considered a study of language loss. This becomes clearer if we think of the future of such a minority language both at the level of the individual and at the level of future generations that will acquire it.

Andersen (1982) is one of the researchers who underline the necessity of using insights from language acquisition in the field of language attrition. He explains that language attrition can be studied in a framework that includes phenomena of language acquisition, since language loss can generally be considered as a special case of variation in the acquisition of a language (Andersen 1982: 86).

Gonzo and Saltarelli (1983) highlight the close correlation between the setting where a language is acquired and the resulting grammar or language type. They explain that each generation of immigrant speakers will be 'handing over' a reduced variety of their language to the next generation, and so on, each time resulting in a more reduced form. They explain that "in this respect, the acquisition of an emigrant language is, in fact, more like the acquisition of a dying language" (p.184). In their view, studying the type of language acquisition of emigrant (or immigrant) languages would be the same thing as studying the process of language loss. They propose to look at the process of language shift in terms of a negative correlation between the acquisition of the dominant language and the loss of the dominated language.

## 2.2 Language change

In addition to acquisition, language change is so related to language loss that various researchers simply speak of language change when they deal with language loss. Studying language loss usually means studying the history of a language as spoken by an individual or a group of individuals. A researcher tries to identify the changes that have occurred in a language between two points in time. This strong link between language change and language loss has been pointed out in a number of places. Münsterman and Hagen (1986: 75) consider dialect loss as a specific type of change. Although they deal with dialect loss and change, what they say applies equally well to language loss and change. Clark (1982: 138) explicitly states his preference to refer to language change research rather than to language attrition research, since language change research includes, among other things, language attrition. Gardner (1982) also encompasses language attrition under the general phenomenon of language change.

The relationship of language change to language loss is not without its problems. If language loss can always be referred to as a case of language change, the latter does not always entail language loss. Disentangling language change from language attrition<sup>2</sup> is not an easy matter. The same morphological simplification can be a sign of language attrition if it takes place in a threatened language, and it can be a natural change if the language in which it is occurring is not threatened by loss. This can be illustrated by reference to Hinskens (1993), who conducted a study on dialect levelling in Limburg. Hinskens provides the following explanation for why he considers dialect levelling as a type of change which does not indicate language loss. Dialect levelling, according to him, results in more similarities between a standard language and a dialect, but the dialect remains identified as such, i.e. is not threatened by loss. Dialect levelling can be a sign of language loss in a situation where a language is threatened by losing its social functions and, therefore, its speakers, as evidenced in some studies like Schmidt's (1991) on dialect levelling in Boumaa Fijian.

## 2.3 Pidginization

A third analogy not uncommon in the literature on language contact is drawn between language loss and the process of pidginization. The main characteristic of

---

<sup>2</sup>This is regardless of whether one defines attrition as a process or as a state of affairs, since in both cases it is assumed that there has been a change which resulted in attrition.

a pidgin language is that both its grammar and the functions it serves are reduced (Samarin 1971). This reduction is a common denominator between pidgins, dying languages, and immigrant languages. All of these exhibit at least the following: a large borrowed lexicon, a reduction in code distinctions such as gender and number, a reduction in sentence embeddings, levelling of paradigmatic and morphological systems, and a lack of obligatory markers for tense and aspect (Gonzo and Saltarelli 1983: 192). We will see some examples of these characteristics in language loss situations in section 3.

Manessy (1977: 132) observes that whenever there is a break in linguistic tradition, no matter what the reason for that break is, the pidginization process is likely to occur. The break in linguistic tradition characterizes immigrant languages as well (Mougeon and Beniak 1991), and thus paves the way for pidginization. Despite the similarities between pidginization and language loss, it should be noted that changes occurring in a language loss situation are not always as pervasive as those attested in pidginization processes. For example, Mougeon and Beniak (1991: 15) report that the simplifications brought about by their population of speakers of French as a minority language in Ontario, where English is the dominant language, are not as drastic as those which are assumed to have taken place in the pidginized varieties of French spoken in former French colonies, especially in Africa. Another important difference between pidgin languages and minority languages is that pidgins do not have native speakers, whereas immigrant languages do.

### **3. Aspects of language loss**

Having discussed some major similarities of language loss with language acquisition, language change and pidginization, we can now have a look at the features that characterize language loss situations. We will group these features under two categories: linguistic features, and extra-linguistic features. Under the first category we will deal with properties of language loss which have a bearing on one or more grammar components, namely semantics and the lexicon, phonology, morphology, syntax, and style. Under the category of extra-linguistic features we will deal with changes in the function of languages undergoing loss, i.e. changes in the domains and functions of their use. Since language loss ensues from language contact situations, a number of the features in question will be drawn from research on language contact.

### 3.1 Linguistic features

Literature on language contact and language loss offers a vast array of linguistic phenomena resulting from contact between languages. In this section, a selective inventory of these characteristics is provided. Needless to say that a complete survey of such characteristics, which will eventually lead to a survey of language contact phenomena in general, is beyond the scope of the present work.

The semantic component of a language can be affected in situations of language loss. The meaning of words might change under the influence of a dominant language. An example of such change is what Seliger and Vago (1991: 8) call 'meaning extension': The meaning of a word in L1 is extended to comprise the meaning of another word in L1, on analogy to the equivalent word in L2. For example, in Hungarian, the distinction between the verb *tud* "know how to do something" and the verb *ismer* "know somebody" is neutralized under the influence of L2 (English), where one verb 'know' is used in both cases.

Another way in which the semantic component of a language might be affected is called "category switch", which refers to cases when a category is maintained at the conceptual level and is expressed in a different linguistic form. An example of this is the use of prepositions to substitute for affixes (Schmidt 1991). Seliger and Vago (1991: 8-9) cite loan translation, or calquing, as a possible result of language loss: L2 phrases or expressions are translated literally in L1, where they are ungrammatical. One of the examples they give is from German. The German equivalent of the English "Forget it!" is *Lass es bleiben!*, but the literal *Vergiss es!* is attested in contexts of language loss.

The size and variety of lexical items are also reported to be affected in language loss situations. For example, Andersen (1982) claims that an individual undergoing language attrition, a language attriter (LA), will have less lexical items available to him or her than a linguistically competent speaker (LC), of the same language. This does not mean that a speaker who knew a number of lexical items will end up forgetting them, or 'losing' them. It rather means that a speaker with restricted usage of a language will end up having a smaller and less varied number of lexical items in that language.

What has been evidenced so far concerning attrition in the domain of the lexicon has to do with the ability of accessing lexical items in a language. Speakers who have not been exposed to their first language for a long time end up taking more time in accessing the representations of lexical items. This latency has been

found to affect the lexicon of speakers of Dutch as a first language in Israel (Soesman 1993), and in Australia (Ammerlaan 1996).

In addition to semantics and the lexicon, syntactic constructions have been shown to be subject to attrition. Andersen (1982: 99) provides a syntactic reduction hypothesis to predict what aspects of the syntax of a language are more likely to be affected by erosion. An LA will use a smaller number of syntactic devices, like constructions and transformations, than an LC of the same language, and will show preference for syntactic constructions which are more transparent, i.e. which more transparently reflect underlying syntactic and semantic relations. Moreover, the hypothesis goes, an LA will tend to have a smaller range of surface structures than an LC of the same language.

Word order has been shown to be affected in language loss situations. Based on research on different minority languages (e.g. Finnish in Minnesota, Slavic languages in the American Midwest, French in Louisiana, Albanian in Greece, etc.), Maher (1991: 68) notes some salient processes that are shared by these languages. The processes directly relevant to syntax are the replacement of synthetic forms by analytic ones or by periphrastic constructions, and the more rigid word order resulting from the progressive reduction in inflectional morphology (see chapters 4 & 6), and preference for coordinate constructions over embedded constructions. Clyne (1977) cites word order as a possible domain of the influence of English as a dominant language on Dutch as a minority language in Australia. Based on data collected in 1971-72, he notes that SVO has become a generalized word order in Dutch, as in the following example where an SOV word order would normally occur (cited in de Bot and Clyne 1994: 4):

- (1) *Ook hebben we ze geleerd Nederlandse versjes*  
 Also have we them taught Dutch verses  
 "We also taught them Dutch verse"

The Standard Dutch equivalent of this sentence is *Ook hebben we ze Nederlandse versjes geleerd*, where the object precedes the verb (SOV).

Schaufeli (1995) reports that word order as used by Turkish immigrants in the Netherlands shows signs of a possible influence from Dutch word order. In an experiment on the use of linguistic cues in sentence interpretation, the Turkish immigrants in the Netherlands showed more reliance on word order than did the control group who lived in Turkey. At the level of production, an analysis of narratives told by the Turkish immigrants showed indications of a higher use of SVO than SOV, as compared to the control group. According to Schaufeli,

however, these results should be interpreted very cautiously, since they might also be congruent with an interpretation that does not take Dutch into consideration, especially since SVO word order is the least marked order in natural languages. Rouchdy (1989: 262) found that the basic word order in Nubian, an East Sudanic language, SOV (and occasionally OVS) has been affected by the basic word order of Egyptian Arabic (SVO) in the language of bilinguals with Arabic as a dominant language.

As is the case with other components of a grammar, the morphology of a language is also bound to be affected in language contact situations. Andersen (1982) hypothesizes that the morphology of a weak language will be affected by reduction in the following manner. Morphological categories that are frequent in the grammar of non-attriters, and those which are less marked are more likely to be maintained. Moreover, those that are equivalent in a speaker's weak and strong languages will have more chance of being maintained.

Some examples of morphological changes in language contact situations are the following. The dative/accusative case distinction is reported to have been lost in certain contexts by speakers of German in Texas (Weinreich 1966: 43). Bhatia (1982) reports on an inter-generational loss of gender, number, and case distinctions in the NP among young speakers of Trinidad Hindi (cited in Maher 1991: 71). A further example of language loss in morphology is the loss of gender distinctions in Asia Minor Greek, which fell out of use as a result of the influence of Turkish, a language that does not make use of grammatical gender (Romaine 1989: 73). Plural formation is also reported to have been affected in language loss situations. According to Dorian (1978: 601) in East Sutherland Gaelic (ESG), a classic example of language death, plural formation has witnessed a drastic change from the use of various forms to the almost invariable use of the suffix '-en' by speakers who have a relatively low proficiency in ESG (semi-speakers in Dorian's terminology). Another example of morphological change is the reduction affecting verbal derivational morphology in Hebrew spoken as L1 in a dominant L2 English context. Kaufman and Aronoff (1991: 185) report the overgeneralization of the template iCaCe(C) to all Hebrew forms in the speech of a child at an advanced stage of language loss.

Phonological investigations of first language attrition are rather scarce (Seliger and Vago 1991: 9). In this section we will present phonological processes that have been dealt with in language contact situations in general, and in language attrition studies in particular. To begin with, a useful classification of phonological processes resulting from language contact is given by Weinreich (1966: 14-28). He

explains that interference arises when a bilingual identifies a phoneme of the secondary language with one in the primary language. The phonetics of a primary language will be governing the production of the phoneme of the secondary language. Weinreich groups the phonological consequences of a language contact situation under four headings (Weinreich 1966: 18-19):<sup>3</sup>

1) Under-differentiation of phonemes: This happens when speakers fail to make a distinction between two phonemes in a secondary language, based on the non-existence of this distinction in their primary language. An example of under-differentiation is the merging of long /i:/<sup>4</sup> and short /i/ in English by bilinguals with French as a first language, since there is no such distinction in the phonological system of French (Romaine 1989: 52). The two English vowels are produced as a short vowel [i]. Another example is the confusion between long /i:/ and short /i/ in Romansch words by speakers of Swiss German (Schwyzertütsch) as a primary language, since Swiss German makes no such distinction (Weinreich 1966: 18)

2) Over-differentiation of phonemes: This is the mirror-image of under-differentiation. Over-differentiation occurs when a speaker carries over a phonological distinction from a primary language to a secondary language, where such a distinction is not made by native speakers. For example, speakers of Romansch as a primary language make a vowel length distinction in Swiss German (Schwyzertütsch), where no such phonological distinction is necessary (Weinreich 1966).

3) Reinterpretation of distinctions. Weinreich explains that reinterpretation occurs when a bilingual speaker makes a phonemic distinction in the secondary language, where such distinction is phonetically conditioned, based on the primary language, where such a distinction is phonemic. One example he gives is the interpretation of the Romansch word /messa/ (with stress on the first syllable and a geminate, i.e. double, /ss/) "Mass" as /mesa/ (with stress on the first syllable, and a single /s/) by speakers of Swiss German as a primary language. According to Weinreich (1966:

---

<sup>3</sup>Although all of the examples in the categorization below are cases from L2 being affected by L1, this categorization should also hold for an L1 being affected by L2. What is important here is which language is primary and which is secondary (See section 1.4).

<sup>4</sup>We will use the standard notation for phonemes and phones or phonetic entities: slashes '/.../' for phonemic notation and square brackets '[...]' for phonetic notation.

19-20), this state of affairs is brought forth by the fact that Romansch makes a phonological distinction between geminate consonants and simple consonants, and Swiss German does not, as well as by the existence of the distinction between long /e/ and short /ɛ/ in Swiss German and its absence from Romansch. Another example of reinterpretation is given by Haugen (1956), who notes the substitution of /z/ by [s] in the English of Norwegian/English bilinguals, because there is no /z/ in Norwegian.

4) Actual phone substitution: This concerns phonemes that have identical properties (features) in two languages, but which have different pronunciations. Romaine (1989: 53) gives the example of the velar voiced stop /g/ in English and Dutch, and how it is sometimes realized as continuant [ɣ] in English by speakers of Dutch as a primary language.

Andersen (1982) hypothesizes that a phonological system will 'lose' some of its distinctions or oppositions, especially those that are not highly functional, in the context of language attrition. The phonological distinctions operative in both the weaker and the stronger languages will be maintained, while those existing only in the weaker one will be reduced.

Manessy (1977: 132) reports that the number and the diversity of distinctive features found in non-native varieties of African languages are more reduced than in corresponding vernacular languages. He also notes that sometimes, contrary to expectation, distinctive features are not eliminated, namely when they are functionally important, as is the case of 'h' in Lubumbashi Swahili. In this language, initial 'h' is rarely heard and is not always realized, except in negative verb forms, where it serves precisely to indicate the negative marker 'ha-' and where it is always realized.

Studies directly dealing with language loss have uncovered a number of phonological phenomena characteristic of language loss situations. Seliger and Vago (1991: 9) report that in their studies on Hungarian/English bilinguals, they found evidence for externally induced attrition in intonational patterns, and in the application of low level rules, such as the allophonic realization of phonemes (e.g. retroflexing /r/ and aspirating voiceless stops) and the diphthongization of vowels. Schmidt (1991: 118) notes the 'wavering' of speakers of Young Dyirbal between the pronunciation of geminate /rr/ as [rr] or [r], presumably under the influence of English, which makes no geminate/non-geminate distinction.



A reverse case of geminate reduction, i.e. the tensing of lax consonants, can be found in the Italian of children of Italian migrant workers in Germany. Di Luzio (1991: 146) interprets this process as one of the "traits which diverge from Italian and converge with German sound structure."

So far, we have dealt mostly with phenomena attested at levels ranging from the sound to the sentence level. Here, we present some phenomena related to the style level. For the purposes of the present discussion, style will refer to the degree of formality that participants adopt in a language activity (Crystal 1982: 337). To begin with, Gal (1984) reports a case of style reduction in Hungarian as spoken by the Hungarian minority in Oberwart, a village in Austria. According to her, young Hungarian/German bilinguals have lost, or not acquired, the ability to shift from local to Standard Hungarian phonological variants in situations requiring the use of these variants, like a formal interview with an outsider. This was found to be the result of the fact that these children had been deprived from social contexts where Standard Hungarian is used.

Language use of individuals undergoing language loss will generally show signs of restriction in use in comparison with the use of that language by competent speakers. One type of restriction in use is what Mougeon and Beniak (1991: 218) call 'Sociolectal-reduction,' which they define as "the loss of vernacular variants and concomitant rise of their standard alternatives." They report that the following vernacular features of Ontarian French were on their way to extinction: possessive *à* (being replaced by *de*), *sur* meaning *chez*, and *ça fait que* (being replaced by the Standard French *alors*).

To conclude this section on linguistic features of language loss, a note is in place about how processing strategies can be subject to inter-language transfer in language loss situations. This transfer, however, was mostly established from L1 to L2 (e.g. MacWhinney, Bates, and Kleigl 1984, McDonald 1987), and the transfer of strategies from L2 to L1 has been given only scant attention in the literature. One of the few places where the transfer of processing strategies from L2 to L1 was dealt with is a study on Chinese-English bilinguals by Liu, Bates, and Li (1992). They found that Chinese participants who had a long history of contact with and use of English apply English processing strategies to interpret Chinese sentences. We will deal with this issue at length in chapter 4.

### 3.2 Extra-linguistic aspects of language loss

Up to this point, we have seen a number of characteristics of language loss at the level of phonology, morphology, the lexicon, syntax, and style. Those characteristics were listed as examples of what is prone to happen to the structure of a language in situations of language loss. The present section deals with the second aspect of language loss that interests us, namely language shift. We will give examples of some situations of language shift where communities were forced to abandon their native language, in order to show that language shift is not always a matter of a normal process.

Campbell and Muntzel (1989: 182) speak of a sudden and a radical death of a language. This involves the dying or extermination of most or all of the speakers of a language, as in the case of languages like Tasmania, Lenca, and Cacaopera. They explain how some Indian languages were 'killed' in El Salvador in 1932 in an event called the 'matanza' (the massacre). The insurgents of a peasant uprising were thought to be "communist-inspired Indians", and the Salvadorian army executed about 25,000 people identified by either dress or physical features as Indians. This led many Indians to simply stop speaking their native languages for fear of being prospective victims, i.e. they were forced to shift from their native language.

Another relevant example of radical language death is the case of the minority language Ainu in Japan. Miyawaki (1992: 358-359) reports on a decree issued around the year 1871 by the Japanese government, which prohibited the use of the Ainu language, among other things, in Hokkaido. Miyawaki reports that there are now as few as 10 fluent speakers of Ainu out of 25,000 people of an Ainus origin.

### 3.3 How does language loss occur?

In the previous sections we dealt with various aspects of the theoretical background of language loss research. This section is about the determinants of language loss. In particular, we will address the question of whether it is language internal factors or external pressures from other languages which determine language change. This issue will come up in most of the chapters in the present work, when interpreting the differences between MA in Morocco and MA in the Netherlands. The discussion will draw on literature on language contact in general, since, as established earlier, language loss is in fact an instance of language change.

Thomason and Kaufman (1991: 35), dealing with language change and language interference in general, give priority to social factors in explaining how

language shift occurs. To them, the sociolinguistic history of the speakers, and not the structure of their language, is the primary determinant of the linguistic outcome of language contact. Swadesh (1948: 234-235) also notes the primacy of non-linguistic factors in determining the obsolescence of languages, since, according to him, "there are no such things as inherently weak languages that are by nature incapable of surviving changed social conditions." This statement is true in its essence, but a proviso needs to be made in relation to language internal factors and surviving pressure from other languages. It has been argued in a number of cases that a language with highly regular and transparent grammar has more chances of being learned earlier (e.g. Slobin 1973), and it might be the case that this transparency plays a role, however limited, in language maintenance as well. Another linguist who emphasizes the role of social, or external, phenomena in language change is Sankoff (1980) who maintains that linguistic structure can be dramatically affected by the social use of language.

The role of language internal factors and universal principles in language change is not completely ignored, even by those who give primacy to external factors in this regard. Thomason and Kaufman (1991: 35) claim that linguistic considerations are relevant in explaining language change, but they are strictly secondary overall. They support their claim by reviewing a number of linguistic constraints which they show to have failed in explaining and predicting the outcome of language contact, because they are all based on the assumption that the structure of a language can determine the outcome of language contact, i.e., what can happen to a language as a result of outside influence. Thomason and Kaufman are very clear in defining the linguistic features that may result from language contact: "As far as the strictly linguistic possibilities go, any linguistic feature can be transferred from any language to any other language."

Cross linguistic studies can offer a lot in explaining the causes of language change and language loss. The limited sources we looked at so far tend to favor language external factors over language internal ones in the explanation of the issue we are discussing. In our opinion, both external factors and language internal ones play a role in language loss, as will become clear in subsequent chapters of this work. External factors can be considered as a reason why language change in minority situations proceeds at a faster rate than other types of 'natural' language change. Trudgill (1983: 102-3) distinguishes between these 'natural' types of language change which are "liable to occur in all linguistic systems, at all times, without external stimulus" and the changes which he qualifies as "relatively non-natural" in that they are "the result of particular sociolinguistic situations." One of

these situations *par excellence* would be where minority languages come into contact with majority languages.

The above survey is in no way exhaustive, since the area of language contact encompasses a wealth of phenomena beyond the scope of the present work. We have given an inventory of the most commonly cited ones in the literature, which are also relevant to the present work.

#### **4. Methodological issues in language loss research**

The previous sections gave an overview of the terminology used in language loss studies, the relationship of language acquisition, language change, and pidginization to language loss, and finally of the linguistic features said to characterize language loss situations and how they are generated in language contact situations. In this section we will look at the methodology of research in the field of language loss. We will first deal with the methodology of language shift, and then with that of language attrition. At the same time, we will give an account of the methodology of the present work.

##### **4.1 Language shift**

In measuring language shift, the researcher is interested in possible changes that an individual or a community has undergone with respect to the habitual use of a language. Typical data eliciting procedures in this line of research are questionnaires (de Vries 1992: 214). Since language is used in a number of domains, the researcher benefits more by designing a questionnaire that specifies language use in these domains, especially the vital ones, like the home, the playground, and the school. In this way, the degree of language shift in a given community can be deduced by looking at the number of domains where a given language is used. For example, in the context of a minority and a majority language, if the minority language is used only at home, it will have much less chance of maintenance than if it were used in domains crucial for language transmission to subsequent generations (Fishman 1990).

A more general approach to language shift than the one outlined above is what has come to be known as a demographic approach. In his study on language shift in the United States, Veltman (1983) adopts such an approach. According to him, it allows one to predict the future of a community, i.e. its size in the future, by considering a few factors, namely the original size of this community, the number

of births and deaths and the relation between the number of immigrants which enter and leave the territory during a period of time.

#### 4.2 Language attrition

Both a longitudinal and a cross-sectional model are used in language attrition studies. A longitudinal design would allow the researcher to record how a feature was used before and after language attrition. This is, by way of illustration, the way Kaufman and Aronoff (1991) investigated morphological disintegration in Hebrew as a first language. They followed the development of one child starting from the age of 2;9 to 4;6 (see 3.1). Another study with a longitudinal design is one on Dutch as a first language among Dutch immigrants in Australia, authored by de Bot and Clyne (1994). In this study, 40 of 200 participants who provided data through interviews in 1971-72 were retested in 1987. This allowed the authors to see if any aspects of the language have eroded with time. The results of this study, however, showed no conclusive evidence of language attrition.

Jaspaert et al. (1986: 39-40) give at least two reasons for the difficulty of devising longitudinal research designs in L1 loss: the length of time intervals between measurements and the overlap between language loss and language change (see 2 above). They recommend that the researcher should carefully separate natural language change from language loss, but they give indications of how difficult this is, rather than how this could be done. They do conclude that "only in a very limited way longitudinal designs are useful in primary language loss research." (p.40)

Some of the difficulties that arise with longitudinal designs can be overcome by cross-sectional ones. Cross-sectional designs allow the researcher to gather data at one point in time, instead of waiting for long periods of time to study attrition phenomena. Cross-sectional designs typically use a control group as a point of reference, in addition to the group which is the object of the investigation, i.e. the experimental group<sup>5</sup>. Their main advantage is that they require much less time from the researcher. Their main drawback, however, is that there are too many parameters to control for. An illustrative example of the difficulty of interpreting differences between groups in cross-sectional designs is provided by Tosi's (1984)

---

<sup>5</sup>We use the term 'experimental group' in a very loose sense, in the same way as Jaspaert et al. (1986) use it, namely as a convenient attribute for the group which has been living in some circumstances different from those of the control group, and not in the sense of a group that has been subjected to some experimental treatment.

study on Italians in Bedford as discussed in Jaspaert et al. (1986: 42). Tosi (1984) compares the Italian of Italian immigrants in Bedford with that of Italians living in Italy and explains the differences between the two groups by reference to a change in the socio-economic status of the immigrant group. However, such a comparison ignores a new dimension in the life of the control group, namely that it also came in more contact with Standard Italian as a result of industrialization. Jaspaert et al.'s comment on Tosi's interpretation is that, unlike what Tosi suggests, the changes do not indicate any form of language loss, but simply a process of change of the experimental group in a different direction (towards a foreign standard language) from that of the control group (towards Italian as a standard language). To overcome such a difficulty, one would have to add a diachronic dimension to the analysis of language change, i.e. to compare the language under study at two points: before and after one group immigrated. This would make the control group unnecessary as a reference point, and would simply mean going back to a longitudinal design, and facing the problems of such designs, some of which we discussed above. It seems then, that both designs have their advantages and drawbacks.

### **4.3 Methodology of the present study**

A cross-sectional design, or so-called static group comparison (Jaspaert et al. 1986: 38), was chosen for the present study for two reasons: the project itself was planned to run for a period of four years, and designing a longitudinal study of language attrition over such a short period of time will probably not yield any significant results. One would need a much longer time to elicit aspects of language attrition. The second reason has to do with availability of informants. Chances are that some of these will not be available at the end of the project, for reasons like leaving school, moving away, going to another school, etc. To avoid this problem, one would have to select a large number of participants, who are not easy to find, seeing that only about one third of the Moroccan community in the Netherlands consists of native speakers of MA (see chapter 2). If we add other requirements to this, like the age range and school attendance, the group will become really small.

The group of informants that provided the data for the present work in the Netherlands will be referred to as the 'experimental group' (see footnote 5), or as

'the second generation group'<sup>6</sup>. It is made up of a total of 25 participants. The choice of a cross-sectional design entails the use of an additional group as a point of reference. This additional group in the present investigation is a group of 30 informants living in Morocco, which will be referred to as 'the control group' (For a detailed presentation of the two groups see chapter 2).

At the initial stage of the present study, a third group was incorporated into the design, namely a group of first generation Moroccan immigrants, but for practical considerations this group was discarded in the final design. The goal behind the inclusion of this group was to gather data on the development of MA in the Netherlands, and on inter-generational processes of language change. A comparison of the first generation with the second generation would have allowed us to see what aspects of the language have become obsolete, and to measure language proficiency between generations.

The exclusion of the first generation group from the study was due to the following reasons. To begin with, the number of first generation informants with MA as a native language is quite small, and as such it is difficult to find these informants. Some of these do attend a few locations where they can socialize, like cafés and clubs, but these are very impractical for data collection due to factors like noise, lack of separate rooms for recordings, and irregular attendance of visitors. Another reason for sacrificing this group has to do with the nature of the tests and experiments themselves. For example, Shaufeli (personal communication) noticed that some of her Turkish participants felt very uncomfortable during the cue-validity experiment (see chapter 4) because of the nature of the sentences which made no sense to them. There is no reason why these problems should not also arise with the Moroccan first generation group, since the tasks are identical. In fact, such problems might be expected with any population outside the academic world<sup>7</sup>. A similar problem would arise with the relativization task (see chapter 6), where the subject is expected to point out the animal that is supposed to be the agent in a complex sentence. According to our own judgements, a Moroccan adult is very likely to feel uncomfortable when asked to point out whether it is a lion, a monkey, or a bear who does the action in a relative clause and in a main clause.

---

<sup>6</sup>The second generation group is in fact made up of participants born in Morocco as well as those born in the Netherlands. Those who were born in Morocco are usually referred to as the one-and-a-half generation (e.g. by van den Berg-Eldering 1988: 8). For the sake of convenience, We will continue to use the term 'second generation' to refer to the entire experimental group.

<sup>7</sup>As we shall see in chapter 4, all the cue-validity experiments were conducted with subjects inside schools and universities.

This, of course, does not mean that it is not feasible to conduct research on the first generation group. One should be prepared to make a number of adjustments in one's methods of data elicitation, and be prepared to spend considerable amounts of time searching for participants. Due to the time constraint on the present project, it was decided to limit our participants to the second generation group in the Netherlands and the control group in Morocco.

In addition to the issue of the design and the participants in the present study, a few words are necessary about the aspect of language which is investigated here. In particular, one should be clear about whether the investigation deals with competence, performance skills in MA, or with both aspects. This distinction between levels is particularly interesting since it is commonplace in the literature to come across findings of investigations of language loss which report language attrition at the level of performance skills, but not at the level of competence. For example, speakers have been found to show signs of difficulty in retrieving lexical items, as measured by reaction times, but no evidence could be found that these items had been completely forgotten or lost from their mental lexicon (e.g. Olshtain and Barzilay 1991).

Both perception and production levels are dealt with in the present work, in the following areas: syntax, morphology and phonology. As will become evident in the relevant chapters, the perception/production distinction is very useful in language loss study. It allows a clear definition of what aspects of a grammar have undergone loss, and the specific level at which this loss has occurred. That is, it allows one to establish whether it is a language skill (e.g., how to introduce oneself), knowledge of an aspect of grammar (e.g., a lexical item or a rule), both (e.g., the meaning of a lexical item and where it can be used), or neither that is affected by loss.

Regarding data elicitation for the present work, the following means were used: questionnaires, experiments, recordings of semi-spontaneous data, and tests. Questionnaires were very useful in gathering information about the linguistic background of the participants, namely their language use and language proficiency.

Experiments allowed for the elicitation of data in a more concise way than recordings or questionnaires, since they allow for the manipulation of conditions or factors to test some previously determined hypothesis. Experiments were used in the present study to elicit data about the use of linguistic cues in sentence interpretation (chapter 4), the perception of phonological oppositions (chapter 5), and the processing of complex sentences with relative clauses (chapter 6).



To obtain data on the production aspect of MA, the participants were asked to tell a story based on a picture book (Mayer 1969). The narratives were recorded on tape, which made it possible to study a number of important characteristics of the speech of the subjects.

The data for plural formation analysis in chapter 3 were gathered by means of a test.



## **Chapter 2**

### **Language choice, language proficiency, and language shift**

#### **0. Introduction**

In chapter 1 (section 4) we saw that what determines the outcome of a language in a language contact situation is, primarily, the sociolinguistic history of the speakers. We also saw that language-internal factors can determine the outcome of a language in such a contact situation, although secondarily, by speeding up or slowing down language change. Factors like the transparency of a grammar of a language and its similarity to the grammar of languages with which it is in contact play a major role in determining this speed. The general picture that has been built so far is that language use and language choice are very important in understanding whether or not a language is undergoing shift.

The main goal of the present chapter is to analyze language choice and language proficiency of Moroccan adolescents in the Netherlands (i.e., the experimental group). The aim of this analysis is to see to what extent one can speak of a language shift situation in the case of these adolescents. Before setting out to accomplish this goal, it is necessary to have some background information about MA, and in particular about its place in the sociolinguistic map of Morocco and the Netherlands.

The organization of this chapter is as follows. Section one deals with the sociolinguistic map of Morocco by looking at the languages that constitute this map, namely MA, Berber, Classical Arabic, Standard Arabic, French, Spanish, and English. Section two is about the background of the informants who took part in the present study, both in the Netherlands and in Morocco. Language choice of these informants is dealt with in section 3, and language proficiency is the subject of section 4. Finally, section 5 is a discussion of the relationship of language choice and language proficiency of Moroccan adolescents to language shift.

#### **1. The sociolinguistics of MA**

In this section we briefly survey the linguistic profile of Moroccans both in Morocco and in the Netherlands. Since the sociolinguistic map of Morocco has been dealt with in some detail elsewhere (e.g. Abbassi 1977, Heath 1989) it will be

only briefly reviewed here. The same can be said about Arabic in the Netherlands. It has already been dealt with in some detail (de Ruiter 1989, Nortier 1989, Otten and de Ruiter 1991, Extra and de Ruiter 1994), and will also not be detailed here. Regarding the grammar of MA, the relevant aspects of it to the present study, namely sentence structure, plural formation and phonology are dealt with in detail in chapters dealing with these aspects of MA.

### 1.1 MA and other languages in Morocco

The languages most commonly spoken in Morocco are MA and Berber. Other languages that play a major role in Morocco are Classical Arabic and French. Spanish and English are also present, but play a much less influential role in the linguistic map of this country. We will briefly review the place and function of each of these languages in Morocco, and then concentrate on the situation of MA in the Netherlands.

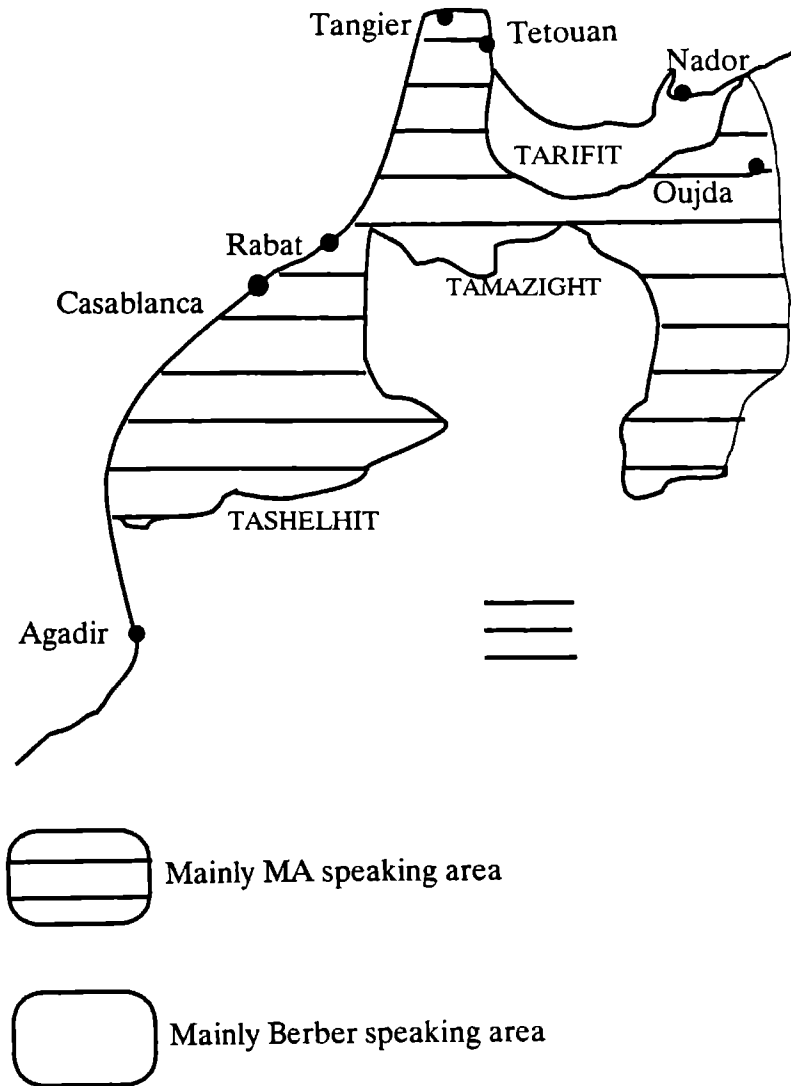
MA is the 'descendant' of at least three Arabic dialects: 1) Non-Bedouin dialects, 2) Bedouin dialects, and 3) Andalusian dialects (Abbassi 1977: 19-21). The first type was introduced in Morocco in the seventh and eighth centuries A.D. (Marçais 1977: viii), and was brought into this country by the first Arab conquerors, who originated from urban centers of a conquered Middle East, hence the reference to this dialect as 'urban' or *mdini* in MA. Bedouin dialects were introduced by subsequent nomadic tribes, namely the Beni Hilal and Beni Salim, who settled in Morocco around the beginning of the eleventh century. The Andalusian dialects were introduced by the refugees who fled Spain around the thirteenth century. These are also referred to as urban dialects, since they developed in urban centers in Spain (Abbassi 1977: 21).

The present state of MA in Morocco is still described by reference to this urban/non-urban dichotomy. Abbassi (1977) explains that *Mdini* speech has developed in the north in urban centers like Tangier, Tetouan, Larache, Ksar-el-Kebir, the Jbala areas, and in central Morocco in the cities of Fes, Taza, Meknes, Rabat, and Salé. The *Jebli* variety spoken in the Jbala area derives its name from the MA word *žbel* meaning "mountain". This variety, also considered one of the urban varieties by Abbassi, came about mostly as a result of Arabized Berber tribes. Bedouin Arabic is mainly spoken in plains and around larger cities.

A more complete description of MA varieties has to take other factors into account. The urban/rural repartition remains too simplistic, due to at least two reasons. First, it does not take into account the role of Berber in the history of

MA. The return to the origin of the Arab conquerors to explain the state of MA today underestimates the role of speakers of Berber in shaping the fate of MA, a

Figure 1: Map of Morocco



fact noted in general about indigenous languages where Arabic came to be spoken (Versteegh 1984: 35)<sup>1</sup>. Second, it does not account for a number of koinés that resulted from specific situations of contact between different types of MA with each other or with Berber varieties. In this connection, Caubet (1993) notes the drastic changes in the situation of MA in the last fifty years, due mainly to factors like population growth, urban development and urban migration, mass media, schooling, contact with other languages (mainly French and Spanish, and Classical Arabic).

Ennaji (1985: 5) identifies at least five dialects of MA, namely the ones spoken in Tangier, Oujda, Casablanca, Fez and Marrakesh, but adds that more dialects can be identified depending on how detailed one's observation is intended to be. According to Ennaji, all these dialects are mutually intelligible because of, among other things, the media and social interaction.

In addition to this mainly geographical dialect repartition, more dialects of MA can be identified by reference to religion. Heath (1989: 6-7) distinguishes between Muslim and Jewish dialects. He notes that Jewish dialects have been widely spoken by members of the Jewish community in some major cities in Morocco, like Fes and Casablanca, especially before the creation of the State of Israel, which was an impetus for large numbers of Moroccan Jews to immigrate to Israel. Some of the characteristics of Jewish dialects according to Heath are the following. At the lexical level, these dialects can be identified by the use of the terms *Ra* "to see" and *Hebb* "to like" instead of *šaf* and *bɣa*, which are used in the Muslim dialects. At the phonological level, Heath cites the merger of /š ž/ with /s z/ as an identifying trait of Jewish dialects. This same merger, however, was pointed out by him as characterizing the dialect of Meknes as a whole (p.6). As such, it should not be taken as a feature exclusively characterizing Jewish dialects.

In fact, as Heath (1989: 7) suggests, more varieties of MA can be defined by reference to adult/child, male/female, and elegant/vulgar dimensions. As this is not directly relevant to our study, we concentrate on one aspect of dialectal variation inside MA, namely the variation between the following dialects: the variety of Tangier and Tetouan, the variety of Casablanca, and the variety of Oujda. The background of most participants in our study can be traced back to one of the regions where these varieties are spoken.

---

<sup>1</sup>The possibility of a substratum effect of Berber on Arabic in the Maghreb in general is pointed out in Marçais (1977:vi) and its effect on MA is mentioned in Abdel-Aal (1968:67). Chafik's (1989) lexicon is devoted to the etymology of Arabic words, with particular attention to those with a Berber origin.

Each of the three varieties can be identified by reference to a number of characteristics at the level of the lexicon and the phonology. According to Assad (1978) the major characteristics of the Jebli variety of Tangier and Tetouan can be found at the phonetic level. In this variety, the sounds /ε/, /γ/, and /D/ are devoiced in certain contexts where they remain voiced in other urban dialects. The stop /q/ is spirantized (realized as [x]) whereas in other MA varieties it remains a stop.

Some differences can be identified at the lexical level. For example, the term for "dog" in Casablanca and Oujda is *kelb*, whereas in Tangier it is *djru*. Similarly, the equivalent of the verb "to look for" is *qelleb* in Casablanca and Tangier, but *dewwer* in Oujda, and the word for "boy" is *weld* or *derri* in Casablanca and Oujda, but it is *εayel* in Tangier. An additional example of lexical differences can be taken from the narratives told by the control group in Morocco (see chapter 5). In these narratives, most participants from Oujda used the term *qerqra* to designate "a frog", whereas the participants from Tangier used *ggrana* and those from Casablanca used *jjrana* to designate the same referent.

Like MA, Berber is a major language in use in Morocco. It is difficult to know exactly how many people use this language, and for that reason, different approximations can be found in the literature. It is variably estimated to be actively used by about a third of the population (Abbassi: 1977: 13), by about 40% of the population (Youssi 1989: 26) and by about 50% (Boukous (1992: 41). There are three Berber varieties traditionally distinguished in Morocco: Tashelhit, Tamazight, and Tarifit. Tashelhit is spoken in the High Atlas, the Anti Atlas, and the Sous valley, Tamazight in the Middle Atlas and part of the High Atlas, and Tarifit is spoken mostly in the Rif area, in the northern part of Morocco (see map). All three Berber varieties are spoken mostly in mountainous and rural areas, but they are also present in major cities.<sup>2</sup>

Berber is not standardized, not used in formal domains, and does not have a unified writing system. In the last decade the medium of writing has been used quite extensively, to produce books, newspapers, and magazines. The alphabets most widely used in this connection are the Arabic one and the Roman one. The original Berber alphabet Tifinagh is also in use, but not as commonly as the Arabic or the Roman alphabet. There are some old manuscripts written in Tashelhit, the oldest of which dates back to around the year 1580 (van den Boogert and Stroomer

---

<sup>2</sup> One of the few available estimates can be found in Adam (1973: 325), who reports that about 20 % of the population of Casablanca in 1952 was of Berber origin.

1993: 57). These manuscripts were written in the Arabic alphabet. Berber also knew some form of writing earlier on in its history, as shown by inscriptions on stone in the Tifinagh alphabet. Some of these inscriptions found in the Hoggar area in the Algerian Sahara date back to around the fourth century A.D. (Reygasse 1932: 40).

More recently, a few changes have taken place in the sociolinguistic map of Morocco. There have been more efforts in favor of Arabicization, starting with the creation of a national center for Arabicization in 1961, shortly after the independence of Morocco in 1956. Another development in the linguistic profile of Moroccans is brought forth by revival movements for the Berber language(s) (El Aissati 1993). However, perhaps the most significant development in the language policy of Morocco is the decision to implement Berber in public education, which was announced recently by the king of Morocco (August 20, 1994).

Unlike MA or Berber, Classical Arabic (CA) is learned at school, and has a large amount of written literature dating as far back as the pre-Islamic period. It is immensely prestigious, and fulfils the functions of a High variety (H) in diglossic situations, like writing and formal interactions (Ferguson 1959)<sup>3</sup>, whereas the low functions (L) of every day communication are fulfilled by the MA and/or Berber varieties. CA is perhaps most associated with religious contexts, since it is the language of the Koran, the Holy Book of the Muslims, and the tradition, the recording of the prophet's and his Companion's sayings and deeds.

Another version of Arabic present in Morocco is Modern Standard Arabic (MSA), which is used mostly in journalism and in other modern writings. Its grammar is quite close to that of CA, but its vocabulary is more accommodated to modern needs of communication (Kaye 1994: 50). Like CA, MSA is not acquired as a first language by anyone, but is a language learned usually through formal schooling, just like CA (Abu-Absi 1986: 342).

The three varieties of Arabic we have seen so far are MA, CA, and MSA. Other types of Arabic have been identified in the literature. For example, Youssi (1992) proposes a slightly different categorization of types of Arabic used in Morocco based on their functions. He distinguishes between Vernacular MA (VMA), Modern Moroccan Arabic (MMA), and Classical Arabic (CA). VMA is used in every day informal communication and can be equated with what is generally referred to as MA, while MMA is used mainly in formal, scientific and

---

<sup>3</sup>The term 'diglossia' was used by Marçais (1930) in relation to Arabic, and as early as 1902 by von Krumbacher in relation to Greek (Kaye 1994: 53).



technical domains. Both VMA and MMA are mostly restricted to oral communication. Classical Arabic is exclusively used in written form (Youssi 1992: 24). Curiously enough, Youssi does not mention Modern Standard Arabic as a separate type of Arabic. Instead, he seems to use the terms 'arabe classique' (CA), 'arabe littéral' (LA), and 'arabe littéral moderne' (MLA) interchangeably. Youssi (p.26) estimates that LA is used by about 20% of the population in official discussions and media.

There seems to be a consensus in the literature on the three-way categorization of the types of Arabic in use in Morocco: Classical Arabic (or literary Arabic in Youssi's definition) used mainly in formal contexts, Modern Standard Arabic, which is a modern form of Classical Arabic, used in writing and speaking in formal and official contexts, and a vernacular MA used in everyday communication. The addition of a Modern MA as another type of Arabic specific to Morocco by Youssi (1992) raises the number of types of Arabic to four. In fact, it is more accurate to speak of a minimum of four Arabic varieties in Morocco, since more types can be identified when we consider that the term Vernacular MA is simply a cover term for a large range of varieties like the variety of Tangier, the variety of Oujda, and the variety of Casablanca. It is difficult, however, to give a reliable account of the number and types of varieties of vernacular MA, since there is, to my knowledge, no study that has attempted to define the status of these varieties. It would be interesting to know, for example, how much an illiterate speaker of the Hassania dialect in the South can understand from the speech of an illiterate speaker of the dialect of Targuist in the North of Morocco. My own guess is that mutual intelligibility in the case of these two hypothetical speakers will largely depend on their capacity to switch to a more widely known variety, like that of Rabat or Fes, which are usually the ones used in plays and other recreational activities broadcast on radio and television.

In addition to Arabic and Berber, the language which has had the most impact on Moroccans is French, and, to a lesser degree, Spanish. French was introduced in Morocco in 1912, when the French protectorate started. It remained in wide use even after the independence of this country, especially at the levels of education and administration. After the independence of Morocco in 1956, French remained as influential and prestigious as it was during the French protectorate (Gravel 1979: 93).

The introduction of Spanish started as early as the sixteenth century in the North of Morocco, but remained inside the walls of Spanish enclaves and did not expand to any significant degree (Carabaza and de Santos 1992: 20). As in the case

of French, the date of the introduction of Spanish at a wider scale is the beginning of the Spanish protectorate in the North in 1912. At that time, wider contact was established between the Spanish and local populations, where Spanish was imposed as an official language and was taught at elementary grades of primary school.

Finally, English is the most recently introduced language in Morocco. The presence of this language in Morocco dates back to World War II when Americans came to Morocco to build air bases. Local populations went to work in those bases and had considerable contact with English (Gallagher 1963: 136-39). Nowadays, the most significant use of English is at the level of academic circles, especially as a subject of study both at high school and at university. It is also used by large numbers of tourists, usually those who do not speak French (Abbassi 1977:35). It is perhaps the most widely known foreign language after French.

## **1.2 MA in the Netherlands**

Since the beginning of the 1960's thousands of workers mostly from Mediterranean countries were contracted to meet the shortage in unskilled labor in the Netherlands (Extra and de Ruiter 1994). The Moroccan community grew up to be the second largest community of immigrants with a non-Dutch nationality after the Turkish one. On January 1 1994, it was estimated at about 165,000 members, excluding Moroccans who obtained the Dutch nationality. The number of Moroccans who acquired the Dutch nationality in 1993 was 7,747 individuals (CBS 1995). About 30% Moroccans were born in the Netherlands. Roelandt and Verweij (1991: 56) report that about half of this community is concentrated in the four largest cities: Amsterdam, The Hague, Rotterdam, and Utrecht.

As far as education is concerned, the situation of the Moroccan community is not any better than it is with respect to employment. The percentages of illiteracy are quite high. For example, van der Mee (1989) reports that among first generation Moroccan immigrants about 38% men and 79% women are illiterate. The Moroccan community is reported to be underrepresented at higher levels of education. Roelandt, Roijen, and Veenman (1992: 174) note that in 1991 65% of Moroccan females (out of a sample of 782) and 47% of Moroccan males (out of 1,116) had no school certificate as opposed to 2% females and 2% males from the indigenous Dutch population. 13% of the Moroccan females and 22% of the Moroccan males had a primary school certificate as their highest qualification. The largest number of Moroccan children attend lower vocational schools, where they are overrepresented (Extra and de Ruiter 1994).

Regarding employment, the Moroccan community is reported to have the highest percentage of unemployment of all ethnic minorities in the Netherlands. In 1989 for example, this percentage was estimated to be as high as 58% of the population aged between 15 and 64 (Extra and Verhoeven 1993: 72).

There is a national daily radio broadcast for the Moroccan community (not in the weekend), which lasts for 45 minutes, almost entirely in Moroccan Arabic. Recently, a Middle Eastern TV channel (MBC) is received in many parts of the Netherlands. The main languages heard on this channel are Standard Arabic and Egyptian Arabic. The Moroccan national television (RTM) is also received by means of satellite dishes by a number of Moroccan families. The main languages used on this television are almost exclusively Arabic and French. Recently, however, news are broadcast daily in each of three main Berber varieties. There are also a number of local radio broadcasts in different cities, usually offering programs in MA and sometimes in Berber (Tarifit).

As far as language use is concerned, the following can be said. Since the majority of Moroccan immigrants in the Netherlands is reported to be from the Rif area in Morocco, we can assume that Tarifit Berber, the language spoken in this area in Morocco, is widely used among them. The percentage of speakers of Tarifit in the Netherlands is estimated to be around 70% (van der Meer (1984) cited in Nortier (1989: 21)). However, MA is also widely used especially as a lingua franca between MA speakers and Berber speakers, and even between speakers of different Berber varieties (de Ruiter 1989).

The Dutch legislation allows for some ethnic minorities to have home language instruction (HLI), known in Dutch as *Onderwijs in Eigen Taal (OET)*. For Moroccan children, Arabic is officially recognized for teaching in the HLI programs. Data provided by the Dutch Ministry of Education indicate that about 69% of Moroccan children took part in HLI programs in the academic year 1990/91 (Extra and de Ruiter 1994). In addition to HLI, a privately organized type of education by parents is found in some places. Usually, it takes place in mosques or in private locations.

From the survey of languages provided above, it can easily be inferred that the Arabic taught in HLI programs is not the Arabic spoken by any of the children or their parents. One can assume that in general when Arabic is formally taught, it is MSA, or CA, since none of the MA varieties has a written tradition, and teaching material in these varieties is simply non-existent. The material used in class for HLI purposes is mostly based on school material used in Morocco, which might

not be suitable for the teaching of Arabic in the Netherlands, due to factors like cultural distance, the nature of the target group, time planning, and teacher training.

A number of studies have dealt with the proficiency of Moroccan children in Arabic and Dutch. In general, the findings of these studies converge towards low proficiency of Moroccan children in Arabic as a school language. In most of these studies, it is difficult to see which type of Arabic is being reported on. It should be remembered that the distance between the home language of a Moroccan child and the language taught in HLI programs is quite large, at least large enough to lead a number of researchers to accept at least three types of Arabic (see above). With this in mind, we proceed to a brief review of the studies in question.

Two studies which clearly dealt with MA as a language spoken at home are authored by Verhoeven, Extra, Konak, Narain, and Zerrouk (1990) and Narain and Verhoeven (1993). In Verhoeven et al., a total of 70 Moroccan children aged 4 to 6, were tested on a number of skills<sup>4</sup>. The results of the study showed that, on the whole, Moroccan children had a better command of MA than of Dutch. Similar results were obtained by Narain and Verhoeven (1993), who tested Moroccan pupils of an age range of 4 to 8. In both studies, the relatively high proficiency of Moroccan children can be attributed to the almost exclusive use of MA in the environment of these children before the age of four.

In a study by Broeder, Extra, Habraken, van Hout, and Keurentjes (1993), Moroccan children aged 10 to 11 were asked to rate their proficiency in their home language on a scale of 1 to 5 where 5 stands for 'excellent proficiency' and 1 for 'no proficiency'. The mean score of the self-reported proficiency was 3.

Driessen (1990) asked Moroccan pupils aged about 12 to report on their oral proficiency in SA<sup>5</sup>. The results he obtained indicated a slightly better proficiency than those of Broeder et al (1993); the average score on a scale of 5 was 3.5.

---

<sup>4</sup>The Moroccan children were tested alongside speakers of Turkish and Papiamentu as L1 and Dutch as L2. The tests were sound manipulation, cognitive categorization, productive vocabulary, receptive vocabulary, sentence imitation, and text comprehension.

<sup>5</sup>In addition to Moroccan pupils, Driessen (1990) also tested Spanish and Turkish pupils. He observes (p.76) that the Spanish and the Turkish children had a higher level of proficiency in the home language than the Moroccan children, which prompted a lowering of the difficulty level of the questions, in order to make the test items homogeneous for the three groups.

Aarts, de Ruiter, and Verhoeven (1993) administered oral tests and written tests to Moroccan children (also aged about 12) in the Netherlands and in Morocco, and consistently obtained better results for the tests given in Morocco.

Before leaving the issue of proficiency, a note is in order about a developmental aspect of MA/Dutch bilinguals. De Ruiter (1989) observes that the proficiency of children in MA goes through a period of stagnation, due mainly to the competing presence of Dutch, starting at about the age of seven. At this age, Dutch starts to be dominant over MA. This observation will be brought up during the discussion of our data on language proficiency of the second generation adolescents.

In addition to language proficiency, another aspect of home language which has received attention in the literature has to do with patterns of language use and language choice. De Ruiter (1989: 58) reports on language choice with parents, siblings, and friends by Moroccan participants of an age range of 7 to 21, who speak MA as a first language. His results, based on self-reports of the participants, indicate that fathers were addressed most frequently in MA (84% to 94 % of the time), followed by mothers (between 62% and 92%). The pattern becomes different with siblings and friends: the former were addressed between 28% and 64% of the time in MA, and the latter between 18% and 54%. The other language that was used next to or instead of MA is Dutch, and in very few cases Tarifit. Pels (1991) studied home language use of 19 Moroccan children before they entered primary school, and reports that 35% nearly always used Dutch at home, 40% occasionally, and only 25% were reported not to use any Dutch at home. From Broeder et al. (1993), the following results emerged, based on 428 Moroccan participants: Arabic was used at home 33% of the time, Berber 28%, Arabic plus Berber 8%, 'Moroccan' 28%, and Dutch 3%. It is not clear here what is meant by 'Moroccan.' It can be a "a non-identified variety of Arabic" (Extra and de Ruiter 1994), but it can also refer to any variety, including Berber ones. Before moving to the next section, a note is in place about this labelling of a Moroccan language as 'Moroccan' or *Marokkaans* in Dutch.

The use of the term *Marokkaans* to refer to MA can very easily result in confusion on the part of the subject asked. The possibility of such confusion was reported by de Ruiter (1989) (see below). Extra and de Ruiter's comment on the attribute 'Moroccan' as 'a non-identified variety of Arabic' can be true, but it is perhaps better to say 'an unidentified variety of a Moroccan language', since we do not even know if 'Moroccan' refers to Arabic or to Berber. In our own selection of participants for the present study, and even after explaining to the contact persons

at schools that we wanted to get in touch with native speaker of MA, I found myself with some students who said they spoke *Marokkaans*. The confusion vanished when I asked whether they spoke 'Tamazight' or 'Arabic'.

The confusion that arises through the use of the term 'Moroccan' is due to the fact that this is a completely external appellation which the Moroccan children have to learn outside the home, namely from speakers of Dutch. Moroccans refer to themselves as speaking Arabic or Tamazight. While for 'Berber' there is a wide consensus that it stands for any Berber variety, the case for 'Moroccan' is different. It refers mainly to being Moroccan. The use of 'Moroccan' to designate MA is wide-spread in the Netherlands, and with it the confusion itself<sup>6</sup>. Finally it should be noted that MA is referred to as 'Moroccan Arabic' in the anglophone literature, as *l'arabe marocain* in the French literature, and as *al ʿarabiyya al-daarija* or "colloquial Arabic" in Arabic and Moroccan literature.

In addition to the confusion caused by the use of the term *Marokkaans*, another factor which might play a role in the discrepancy between reported and actual language use at home is the formal context of the interviews. To back this statement we quote from de Ruiter (1989: 51), who used a questionnaire and a picture description task to determine the original home language. In de Ruiter's words "Several younger subjects who had claimed to be Moroccan Arabic speakers were 'caught out' by performing the task [of picture description] in a Berber language, chiefly Tarifit." He explains this incongruity between reported and actual language use as due to the formal setting of the school. Since Berber is used in informal domains, the participants might have found it more suitable to use a variety of Arabic, which is closer to the appropriate language for formal settings. A similar case to this one is that of some participants from our control group in Morocco who started telling their narratives in SA, despite the repeated reminder that they were expected to tell the story in their home language. Here, too, one can say that it is due to the formal context of the testing, mainly to the presence of an instructor, a classroom, and a picture book, all of which are not associated with MA, as well as to the prestige of SA.

In addition to language proficiency and language choice, the actual language behavior of MA native speakers has also been the subject of some investigations.

---

<sup>6</sup>For example, the radio announcer on the daily Moroccan program introduces the Berber news bulletin saying: "[...] het nieuws in het Berbers" whereas the news in Moroccan Arabic is introduced as "[...] het nieuws in het Marokkaans."

For example, Nortier (1989) examined code-switching behavior among MA speakers, and reports that bilingual speakers whose knowledge of MA and Dutch was more balanced had a higher percentage of intra-sentential code switches and single word insertions than the participants who had less command of Dutch, or were MA dominant.

## **2. The background of the participants**

### **2.1 The experimental group**

The participants that took part in the present study live in Nijmegen, a city in the eastern part of the Netherlands, with about 147,000 inhabitants. Nijmegen is the host city of about 2,000 Moroccan immigrants. Their situation in Nijmegen is not any better than it is in the rest of the country. In January 1994, 398 people with a Moroccan nationality were registered as looking for a job in Nijmegen (CBS 1994).

An investigation completed in 1994 by the regional advisory board of Nijmegen (SAD) (Aaliouli and van Wanroij 1994) provides some relevant details regarding HLI for minority children in Nijmegen. In October 1993, there were 426 children with a Moroccan nationality registered for primary school education<sup>7</sup> (about 25% of the total of non-Dutch children). Of the Moroccan children, 77% were registered for HLI (maximum 2.5 hours a week). Of the 21 schools where HLI is given only 4 schools organize HLI outside the regular school time (maximum 2.5 hours a week). The report of the SAD notes that not all the scheduled lessons in HLI do in fact take place. Some of the reasons cited in this connection are the interruption of lessons, lack of homogeneity in the groups, the time it takes to prepare such groups for the lesson, and the fact that there are no facilities for replacing teachers when they are absent. According to the same report, the HLI teachers judge the amount of time allotted to HLI as not enough for the pupils to acquire any significant proficiency in the home language.

With respect to the social organization of Moroccan immigrants, it is administered by immigrants themselves and by the government (local and national). Next to Dutch institutions, there are centers and organizations especially geared towards the needs of immigrants, some of which are meant for immigrant communities in general, and some for Moroccans in particular.

A total of 25 participants, 14 females and 11 males, took part in the present investigation. All of them had MA as a home language. The group was selected on

---

<sup>7</sup>Primary school education includes grades 1 to 8 (between the age of 4 and 12).

the basis of length of stay in the Netherlands, level of education, and age. The individuals that were considered eligible for the study were those who had stayed for at least five years in the Netherlands, who had spent between six and nine years at school, and who were between 13 and 17 years of age. Not all of the 25 took all of the tests. This was caused by the fact that more than one session was needed to collect the data, and it was difficult to find the same persons for all the sessions.

Information was collected from participants about the origin of their parents, and/or what region the family visits in Morocco when on holiday. This helped in categorizing the home language variety by reference to parents' origin in Morocco. The resulting partition is the following: 4 participants from Casablanca, 5 from Tangier, 8 from Oujda, 2 from Marrakesh, 1 from Rabat, 1 from Ifni, 1 from Guerssif, and 3 gave no response. Table 1 gives information on the profile of these participants.

For the participants who took HLI, it is not easy to know exactly how much time they spent in such classes. One of the main reasons for this is that this instruction is voluntary. Moreover, some participants did not specify whether they took 5 hours or 2.5 hours a week, although they were asked for such specification on the questionnaire.

The type of instruction received at koranic schools is even more difficult to assess. This type of schooling is organized at local levels, mostly by members of the Moroccan community themselves, and has no official syllabus. The figures reported for these two types of education are only indicative of whether or not there were conscious efforts on the part of parents and/or children to use Arabic. As said earlier, HLI or lessons at the koranic schools are usually not in the mother tongue of the pupils. However, in these classes home languages are also sometimes used, and this would mean an opportunity for the learner to use his or her mother tongue.

The following differences can be noted between the informants. Some of them were born in the Netherlands, and never spent more than a few weeks in Morocco. Others were born in Morocco and came to the Netherlands before the age of 4. A few came to the Netherlands after the age of 4. Others were sent to Morocco where they followed some education in Arabic for a while (participants 4, 17, 18, and 24). These differences will be brought up in the discussion on language proficiency and language shift (section 5), in order to see the effect of time spent in Morocco on proficiency in MA.



Table 1: Profile of participants.

Name codes	Sex	Date of birth	Date of immigration	Years of primary school	Years of secondary school	Years of HLI	Years at Koranic school	Parents' origin
1 F A	M	79	NI*	8	0	3	2	Casa
2 L D	M	79	NI	8	0	0	5	Casa
3 A M	M	77	NI	6	2	1	0	Tangier
4 B T	M	77	NI	6	3	0	3 in Mor	-**
5 A A	M	79	NI	8	1	0	0	Oujda
6 L M	M	79	NI	8	1	0	0	Marrakesh
7 H R	M	79	81	8	1	0	1	Oujda
8 F M	M	80	NI	8	1	6	0	Casa
9 G R	M	78	NI	5	2	5	2	Guerssif
10 K B	F	76	87	3	3	2	0	Oujda
11 E H H	F	79	NI	8	1	2	0	Rabat
12 B S	F	77	NI	7	3	0	1	Tangier
13 B I	F	79	NI	8	2	0	8	Tangier
14 S H	F	77	80	8	1	1	0	Casa
15 K N	F	79	81	8	1	0	1+	Oujda
16 S H	F	79	NI	8	1	-	1	Tangier
17 R F	F	79	88	8	1	3 in Mor	0	Ifni
18 B I	F	74	88	2	2	5 in Mor	0	-
19 K F	M	76	87	2	3	2	1	Oujda
21 H H <sup>a</sup>	F	77	NI	8	1	3	2	Oujda
22 F K	M	79	NI	8	1	5	0	Marrakesh
23 O Z K	F	76	85	4	4	0	0	
24 T H	F	77	NI	2	4	5 in Mor	1	Tangier
25 S B	F	75	88	1	5	5	0	Oujda
26 N S	F	80	81	8	1	0	1	Oujda

\* Participant born in the Netherlands

\*\* Data missing

---

<sup>a</sup>Participant number 20 turned out to be a native speaker of Berber, and did not take part in the tests.

## **2.2 The control group**

The control group in Morocco consisted of 30 participants, 19 males and 11 females. They originated from three different areas in Morocco, selected on the basis of the origin of parents of the participants in the Netherlands. 16 participants were from Casablanca, 10 from Tangier, and 4 from Oujda. The repartition of participants on the different regions was meant to give a representative sample of data from MA in Morocco, which might help avoid problems in interpreting data from the experimental group, such as lexical bias in the tests. For example, to rule a plural word produced by a second generation child as incorrect, one has to know first if that form is not in use in some MA variety.

All of the participants in the control group had at least 5, and at most 9 years of schooling. They took part in all the tests and the cue validity experiment. They were not required to fill out questionnaires reporting their language choice patterns, since they were all native speakers of MA, in an MA dominant context.

## **3. Language choice**

To assess the language choice and language use patterns of the Moroccan adolescents in the Netherlands, these were asked to answer questions about their language choice with parents, siblings, and friends, and about language choice of their parents with each other and with the rest of the family. A questionnaire was designed for this purpose (See Appendix 1). The questionnaire was written in Dutch in order to avoid problems that might arise in case a participant would not read Arabic.

Table 2 gives the percentages reported by the participants as reflecting the frequency of use of MA and Dutch when they address their parents, and when parents address each other.

Table 2: Percentages of MA use with father (Qa), with mother (Qb), among parents (Qc), and of parents to respondent's brothers/sisters (Qd).<sup>9</sup>

	Qa	Qb	Qc	Qd
01	80	30	100	60
02	20	30	100	80
03	--*	50	--	50
04	98	97	100	99
05	100	100	100	100
06	--	--	--	--
07	--	--	--	--
08	40	50	90	--
09	90	20	95	50
10	100	100	100	100
11	--	100	100	100
12	100	100	100	100
13	50	50	100	100
14	95	100	100	95
15	100	100	100	100
16	70	60	100	50
17	100	100	100	100
18	90	100	100	100
19	100	100	100	100
21	100	100	100	100
22	100	100	100	100
23	90	90	100	100
24	100	100	100	100
25	--	--	--	--
26	90	80	100	100
Mean:	88	82	99.7	91.3
SD:	20.9	28.5	1.1	17.6

\* data missing

Table 2 shows that there is an overwhelming use of MA inside the household. A t-test was conducted on each pair in the four questions. The following differences in means turned out to be significant: the difference between the means of Qa and Qc ( $t = -2.42$ ;  $p = .026$ ), the difference between the means of Qb and Qc ( $t = -2.78$ ;  $p = .12$ ), the difference between the means of Qc and Qd ( $t = 2.18$ ;  $p = .043$ ), and

<sup>9</sup>The percentages given for Dutch and MA always added up to 100, hence the figures for Dutch are not reproduced in the table.

the difference between the means of Qb and Qd ( $t = -2.27$ ;  $p = .036$ ). The highest amount of MA use is reported to be between parents themselves.

Although the difference between the use of MA with fathers and mothers is not statistically significant, such difference, also pointed out in other studies (eg. de Ruiter 1989) deserves a short comment. The choice of more MA with fathers than with mothers might indicate that the latter are a little more open to the use of Dutch at home, than fathers are. An interpretation in terms of the proficiency of parents in Dutch would not work, since schooling among males is relatively higher than among females (see section 1.2 above), one would expect fathers to know more Dutch than mothers. Narain and Verhoeven (1994: 39), however, report that their participants used MA with fathers about 85% and with mothers about 86% of the time, thus casting some doubt on the interpretation offered above.

Male participants reported a slightly higher tendency than female ones in using Dutch, especially when speaking to parents (28% percent and 5.5% respectively). A possible explanation for this difference is that Dutch might indicate too much of an involvement in Dutch society, which many parents might not find a good sign for the future of their children, especially if they are girls (El Aissati and de Bot 1994).

Next to questions on patterns of language choice involving parents at home, participants were asked to report on their language use with their siblings and their friends. The reported language choice with siblings is given in table 3.

The following observations can be made about table 3. Seven participants reported that they used Dutch exclusively, seven participants reported an exclusive use of MA, and nine reported the use of both MA and Dutch. Only in the case of participants 1, 12, 13, and 24 can we notice a difference in language choice between oldest and youngest siblings. Participant 1 reported the use of both MA and Dutch with his oldest sibling, and an exclusive use of Dutch with his three younger ones. Participant 12 reported that she used MA with her two older siblings and Dutch with her two younger ones. Participant 13 reported the use of MA and Dutch with her oldest brother, and Dutch only with her two younger brothers. Participant 24 reported the exclusive use of MA with her oldest sibling, and the use of both MA and Dutch with her youngest one. It is important to note that there is no case where language choice changed from Dutch with oldest sibling to MA with youngest sibling. It is usually the choice of MA that changes into choice of Dutch, or the choice of MA and Dutch changes into the exclusive choice of Dutch. In general, the answers to the questions on language choice with siblings indicate that

Table 3: Language choice with oldest brother/sister (Qe), next older brother/sister (Qf), next older brother/sister (Qg), and youngest brother/sister (Qh).

	Qe	Qf	Qg	Qh
01	MD*	D**	D	D
02	D	D	D	D
03	D			
04	MD	MD	MD	MD
05	M†	M		
06	M	M		
07	M	M	M	M
08	D	D	D	
09	D	D	D	D
10	D	D	D	D
11	D	D	D	D
12	M	M	D	D
13	MD	D	D	
14	-	-	-	-
15	M	M	M	M
16	MD	MD	MD	MD
17	M	M	M	M
18	MD	MD	MD	MD
19	M	M	M	M
21	-	-	-	-
22	MD	MD	MD	MD
23	D	D	D	D
24	M	MD	MD	MD
25	MD	MD	MD	MD
26	M	M	M	M

- MA and Dutch

\*\* Dutch only

† MA only

Dutch is used more often than MA.

The questions about language choice with friends inside the home and outside the home yielded the results given in table 4.

Table 4: Percentage of MA use with friends outside the home (Qi) and inside the home (Qj).

	Qi	Qj
01	00	60
02	00	00
03	50	10
04	50	50
05	50	50
06	00	00
07	100	100
08	10	10
09	10	--
10	00	00
11	100	100
12	50	50
13	20	50
14	50	50
15	50	90
16	05	50
17	--	80
18	50	50
19	50	100
21	00	00
22	00	00
23	50	80
24	50	50
25	50	50
26	50	50
Mean:	36	46
SD:	30	34

Dutch is used more often than MA with friends both inside and outside the home. In the second condition, i.e. inside the home, participants use Dutch a little less than outside the home. This difference was submitted to a t-test analysis, which indicated a tendency towards significance ( $t = -1.99$ ;  $p = .059$ )<sup>10</sup>. This might be due to the same reason given above for female speakers, namely that it is

---

<sup>10</sup>If one starts with the hypothesis that Dutch will be used more outside than inside the home, the t-test might be interpreted as a one-tailed test, and would yield a significant difference ( $p = .059/2 = .029$ ).

undesirable to show signs of alienation from one's group, by showing signs of too much openness on Dutch society. It might also be due to the presence of parents who usually speak little Dutch. In either case, the implication for language use is that the outside context, as opposed to the home context, gives more opportunity to and/or exercises more pressure on adolescents to use Dutch.

In addition to language use within the household and with friends, participants were also asked to report on how often they think they use MA and Dutch in general, that is regardless of context or interlocutors. Their answers indicate that on average they speak MA 38% of the time and 62% Dutch (SD: 14) (see table 5). We will come back to these results in more detail below.

From the figures and the discussion presented above, it becomes clear that the Moroccan adolescents use more Dutch than MA in their everyday interactions, except where their parents are involved. One would expect a high degree of proficiency in Dutch, since this language is frequently used. This is what will be evidenced in the next section on language proficiency. Before moving to that section, however, it should be noted that the questions asked about language use were of course not exhaustive. Because participants were expected to take part in tests and experiments, it was decided that a longer questionnaire would make them too tired, and would leave too little time for these tests and experiments.

#### **4. Language proficiency**

An evaluation questionnaire was designed to collect data on self-reported language proficiency of the participants in MA and Dutch. The questionnaire was adapted from Gardner, Moorcroft, and Metford (1989) (See appendix 1). The questionnaire consisted of a set of items designed to tap information about speaking, listening, writing, and reading skills. It was written in Dutch in order to avoid problems that might be faced by participants who have a low proficiency in Arabic, especially in reading and writing. For reading and writing, the participants were explicitly told to report on their skills in Standard Arabic, since MA is not a written language. Participants were asked to rate themselves on a given question in a given skill on a scale of 1 (task impossible or extremely difficult) to 5 (no problem at all with this task). In order to assess the reliability of the test items, Cronbach's-Alpha was calculated for the speaking and listening comprehension skills. The reliability

coefficient for speaking items was .9166, and for listening items .8713<sup>11</sup>. Table 5 presents the mean scores reported by the participants for their speaking and listening comprehension skills:

Table 5: Mean scores of self-evaluation of speaking and listening skills.

Speaking		Listening	
Mean	SD	Mean	SD
MA 3.9	0.91	4.1	0.78
DU 4.7	0.32	4.8	0.32

(N = 25; SD = Standard deviation)

A t-test on the difference between the means of MA and Dutch revealed a difference significant at the .01 level, between the means of MA and Dutch in speaking skills ( $t = -4.46$ ;  $p = .00$ ) as well as in listening skills ( $t = -4.24$ ;  $p = .00$ ). The t-test lends support to the observation that the participants feel they are more proficient in Dutch than in MA (For the complete list of mean scores of participants, see table 6 below).

Female participants reported a higher fluency in MA than male participants. Their mean proficiency score for speaking was 4.2 for MA ( $SD = .9$ ) while that of the male participants was 3.6 ( $SD = .9$ ). The mean scores for Dutch were fairly similar: 4.8 for males ( $SD = 0.27$ ) and 4.7 for females ( $SD = 0.35$ ). A t-test analysis on the separate means of male and female participants revealed no significant difference ( $t = -1.69$ ;  $p = .107$ ). For the listening comprehension skills, the means for male participants was 3.8 ( $SD = 0.8$ ), and for female participants 4.3 ( $SD = 0.7$ ). A t-test was conducted on these two means and, again, revealed no significant difference ( $t = -1.59$ ,  $p = .131$ ).

In general, the reported proficiency scores were higher for Dutch than for MA, as can be seen in figure 1.

---

<sup>11</sup>Alpha remained very high no matter what item was deleted in the Item-total statistics, with a minimum value of .9060 and a maximum value of .9148 for speaking items, and a minimum value of .8428 and a maximum value of .8775 for listening comprehension items.



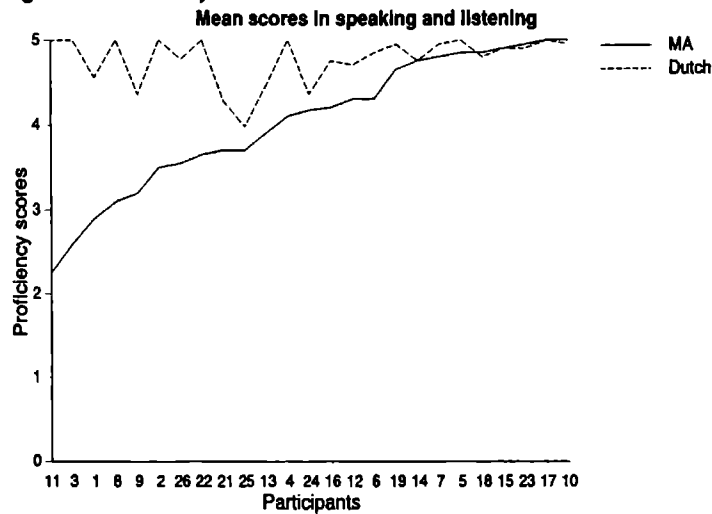
**Figure 2: Proficiency in MA and Dutch**

Figure 2 shows a clear concentration of most participants around the highest proficiency score in Dutch. For MA, one can easily observe that the means for the reported scores have a wider range than for Dutch (between 2.25 and 5 for MA and between 4 and 5 for Dutch).

In order to have a better idea about the proficiency of these participants in MA, two fragments of speech extracted from a narrative (see chapter 5) were randomized and presented to two native speakers of MA. These were linguists and were asked to judge the fragments on the basis of how native-like they were. A total of 40 fragments from the narratives of 20 participants were presented for evaluation. The two linguists judged the fragments on a scale of 7, where 7 stands for native(-like) proficiency, and 1 for not proficient at all. For each participant there were two scores from each judge. The participants' scores that were entered for the correlation analysis below were those they provided in the self-evaluation for the speaking skills, and not those they provided for understanding. This was done in order to have the scores of the participants and the judges refer to the same skill. The judges heard fragments that were spoken by the participants, and as such it is difficult to take the scores of these judges as referring to the overall proficiency of the participants.

Correlations were calculated between the judges' scores: first, a correlation coefficient was obtained for the two scores each judge provided, in order to see how consistent each judge was. This coefficient turned out to be significant at the 0.01 level for both judges (0.86 for judge one, and 0.79 for judge 2). Then the means of the two scores of each judge were calculated and entered as the variables for a correlation test. The correlation coefficient was 0.7739 and was significant at the 0.01 level. The means of the judges' scores were correlated with the participants' self-reported scores. The correlation coefficient between participants' self-reported scores and the mean scores given by the judges was relatively low (0.5025), but turned out to be significant at the 0.05 level. Based on these correlations, one can say that the judges and the participants had relatively similar judgements of the proficiency of these participants.

There are at least two important factors in the explanation of differences between participants. One has to do with the length of stay in Morocco and the other one has to do with frequency of use of MA. For the sake of convenience and ease of reference to participants and their scores during the discussion, table 6 gives the self-evaluation scores of the participants, the judges' mean score, and the percentage of frequency of use of MA. The frequency of use was given by each participant in answer to the question: "If asked about how often you speak MA and how often you speak Dutch, what would you say?" (See Appendix 1).

Of the six participants who were born in Morocco, and who came to the Netherlands at about the age of 9 (Participants 10, 17, 18, 19, 23 and 25), only participant 25 reported a mean score lower than 4 for her proficiency in MA speaking and listening skills. The remaining participants reported mean scores between 4.7 and 5. A look at the judges' evaluation of the fragments of participant 25 reveals an interesting phenomenon. Their mean score for these fragments is 4.82 ( $SD = 0.5$ ). This suggests that participant 25 might simply be more proficient than she feels, or the fragments that were selected for evaluation happened to sound good enough to the judges. This issue of underestimating or overestimating one's proficiency will be dealt with in more detail in due course.

The picture that emerges from the profile of the participants who came to the Netherlands at about the age of 9 is hardly surprising: They have a high command of MA because they spent a long time in Morocco where they spoke MA most of the time, if not all the time. In fact, it would have been surprising if they had reported low proficiency scores in MA.

A small number of participants (7, 14, and 15) was born in Morocco and came to the Netherlands when they were between 2 and 4 years old. All three of them

Table 6: Self-evaluation mean scores of the participants and the mean scores of the judges

Partici- pants	Speaking		Listening		Judges' score	Frequency of MA use
	MA	DU	MA	DU		
1	3.00	4.50	2.70	4.60	2.67	20
2	3.10	5.00	3.90	5.00	1.96	40
3	2.00	5.00	3.20	5.00	1.07	25
4	4.20	5.00	4.00	5.00	--*	0
5	4.80	5.00	4.90	5.00	3.75	50
6	4.10	4.70	4.50	5.00	1.60	35
7	4.70	5.00	4.90	4.90	2.85	98
8	3.90	5.00	2.50	5.00	3.03	10
9	2.90	4.20	3.50	4.50	4.46	40
10	5.00	4.90	5.00	5.00	4.46	40
11	1.70	5.00	2.80	5.00	--	50
12	4.30	5.00	4.20	4.40	3.03	50
13	4.10	4.90	3.70	4.00	3.75	30
14	4.50	4.50	5.00	5.00	4.64	50
15	4.80	4.80	5.00	5.00	3.57	50
16	4.00	4.50	4.40	5.00	3.75	50
17	5.00	5.00	5.00	5.00	4.82	50
18	4.70	4.60	5.00	5.00	--	20
19	4.50	4.90	4.80	5.00	--	50
21	3.75	4.25	3.70	4.30	3.92	50
22	3.10	5.00	4.20	5.00	2.85	40
23	5.00	4.90	4.90	4.90	--	50
24	4.25	4.50	4.10	4.20	5.00	30
25	3.40	3.75	4.20	4.20	4.83	50
26	3.70	4.75	3.40	4.80	2.85	20

\* Participant did not take part in narrative task.

reported a high score in MA proficiency, respectively 4.8, 4.75, and 4.9. It is difficult to think of this high proficiency as a result of the length of time these participants spent in Morocco. At such an early age, children are mostly, if not exclusively, dependent on the home environment for language acquisition. As such, whether they are in Morocco or in the Netherlands might not be of consequence in determining their language proficiency. A look at the frequency of use of MA which these participants reported can help explain this proficiency. Participant 7 reported a mean frequency of 98% of MA use (and 2% of Dutch use), participants 14 and 15 both reported that, in general, they use MA 50% of the time. It is more likely, then, that the high proficiency of these participants is due to their high frequency of use of MA.

The case of participant 5 lends some support to the interdependence between use and proficiency. This participant reported very similar mean scores to participant 15, but unlike her, he was born in the Netherlands and never went back to Morocco except for vacations with his parents. A very likely explanation for his high proficiency is the frequency of use of MA which he reported, namely about 50% of the time. Moreover, he reported an exclusive use of MA with his two siblings (see table 4 above).

Apparent counterexamples to the role of frequency of use in determining language proficiency can be provided by participants 11 and 21. Both of these participants reported to use MA about 50% of the time, but reported relatively low proficiency scores for such high percentages of frequency of use. Their respective mean scores are 2.25 and 3.7<sup>12</sup>.

In general, the amount of use of MA does indicate, to some extent, the amount of proficiency of a given subject. To lend more support to this observation, a correlation test was conducted on the proficiency of participants in MA with their reported amount of use of MA. The results indicate a significant correlation at the .01 level with a coefficient of .7158. A regression analysis also reveals a significant dependence of proficiency on amount of use. The significance was at the .01 level ( $F(1,12) = 12.61$ ;  $p = .004$ ). The participants who were born in Morocco and came at about the age of nine were excluded from this test (participants 10, 17, 18, 19, 23, and 25), and so were the participants who reported a score that differed with more than 1.5 points from the judges' scores. In this last case, participants 6,

---

<sup>12</sup>Participant 25 also estimated her overall use of MA to be about 50% of the time, and reported a low proficiency score, namely 3.8. She is not taken as an example because the judges gave her a score of 6.75 (4.82/5).

7 and 9 were discarded. Participant 6 reported a proficiency mean score of 4.1 in speaking while the mean of the judges was 1.6, participant 7 reported a mean score of 4.7 while the mean score of the judges was 2.85, and participant 9 reported a mean score of 2.9 while the judges rated his proficiency at 4.46. Participants 4 and 24 were also excluded from the analysis, because they went back to Morocco for a period of 3 and 5 years respectively. The reason behind the exclusion of these participants (a total of 11) was to keep the group as homogeneous as possible.

From the discussion so far, we have found two important factors in explaining language proficiency: length of stay in the country of origin, i.e. Morocco, and frequency of use of MA. These two factors have the same effect, namely the improving of the proficiency of speakers, because they both involve high amounts of language use.

Despite the statistical significance of the correlation between proficiency and frequency of use, a few words have to be said about some cases with large discrepancies between reported amount of use and reported proficiency. Participant 8 reported that he used MA 10% of the time, and estimated his proficiency at 3.1. (judges' mean score 3.03), while participant 3 reported that he used MA 25% of the time, and estimated his proficiency at 2.9 (judges' mean score 1.07). A look at the profile of the two participants reveals the following. Participant 3 might have overestimated his use of MA, for at least the following reasons. First, he lives with his mother in a one-parent household. He reports that he speaks to her about 50% of the time in MA, and about 50% of the time in Dutch. Second, he has only one sister with whom he speaks Dutch only. Third, he reports that 40% of the family's friends are Moroccan, while 50% are Dutch, and 10% are of other nationalities. Finally, he reports that with his friends he uses MA 50% of the time outside the home, and only 10% when he brings them home. This is an interesting pattern in that it runs counter to what we observed for other participants, namely that when they bring their friends home, they speak more MA to them.

Participant 8, on the other hand, lives in a household where parents speak MA to each other about 90% of the time. Family friends are mostly Moroccan (80% of them). He speaks MA to his friends about 10% of the time, both inside and outside the home. Moreover, participant 8 has followed HLI for 6 years, which means that he has had more opportunity than participant 3, who followed no HLI instruction, to communicate in MA both with the instructor and with classmates. Thus, an important difference between the two participants is that participant 8 might hear more MA around him, both in the home environment and outside. If this is true, the estimate of frequency of MA use given by participant 3 might in reality be

lower than the one given by participant 8, and as such the proficiency scores and the percentages of frequency of use might be more consonant than the reported figures suggest.

Another pair of participants who should be dealt with in detail is participants 9 and 26. The first participant reported a mean proficiency score of 3.2, and a frequency of MA use of 40%. Participant 26, on the other hand, reported a mean proficiency score of 3.55, and 20% as a frequency of MA use. One might wonder, then, why participant 9 would report a lower proficiency score than participant 26, when she uses MA twice as much as participant 26. The answer can be found if we look at the judges' scores, which, as we saw above, is 4.46. From our conversations with the two participants in question, we can say that participant 9 is much more proficient than participant 26. Thus, it is more likely that participant 26 overestimated her proficiency in MA, while participant 9 underestimated his own.

The comparison of the two pairs of participants carried out above was not meant to give conclusive evidence for the relationship of reported frequencies of MA use to the reported proficiencies. Rather, it was meant to give an idea about how participants might give a less accurate estimation of their language use, and for that matter of their language proficiency, than the background information of those participants suggests. As such, the figures reported by the participants should be taken as indicative of the reality of language use and proficiency, and not as accurate measurement tools of this reality. Other sources of data, such as spontaneous language use and testing, remain indispensable for substantiating the discussion on language use and language proficiency.

Before proceeding to the discussion of whether or not one can speak of language shift in the case of MA, some observations need to be made regarding the informants who reported a relatively low proficiency for the same items in MA and Dutch. These are participants 9, 13, 16, 21, and 26. This phenomenon is somehow counterintuitive: one would expect each participant to be able to use one or both languages with a native-like proficiency. That is, if a participant finds it difficult to understand sports news in MA, he or she must find it easier in Dutch (see appendix 1 for the proficiency questionnaire). It is possible, however, that some items refer to tasks which are simply difficult to perform for lack of knowledge of what the task involves. For example, a participant might simply find it difficult to tell how a Prime Minister is chosen (item 11 in the questionnaire), not because of the language but because of lack of knowledge on that topic. Similarly, some participants might find it difficult to discuss cultural differences between the Netherlands and Morocco (item 12), because they might have never thought of

such differences, or they do not know what cultural differences mean. In fact, participant 16 did find the two tasks in items 11 and 12 quite difficult to do in both MA and Dutch. In MA, item 11 was given a score of 3 and item 12 a score of 1, and exactly the same scores were given to these two items in Dutch. Participant 9 found the same two tasks impossible to perform. He gave a score of 1 (the lowest on the scale) to both items in both languages. This could simply mean that participants 9 and 16 find it difficult to perform the tasks of telling how the prime minister is chosen and discussing a controversial subject, both in MA and in Dutch. Participant 13 found item 4 in listening comprehension difficult in MA (score: 2) as well as in Dutch (score: 3). Participant 21 found the same degree of difficulty in item 8 in MA and in Dutch (score: 3), and also found item 11 a little more difficult in MA (score: 2) than in Dutch (score: 3). With respect to participant 26, she found item 12 very difficult in MA (score: 1) and of an average difficulty in Dutch (score: 3).

A second interpretation of the phenomenon of low proficiency in both languages has to do with the bilingual norm in a bilingual community. That is, participants might be so used to speaking two languages that if asked about what they can do in one language in isolation they will report a difficulty, since it is a norm to them to use both languages to achieve their communicative purposes. This interpretation can be supported by the results obtained for the question of language use with siblings (see section 3). Nine participants reported that they use both MA and Dutch. This might mean that they use both languages in the same interaction, i.e. they code-switch, or that at times they use MA and at other times they use Dutch. In either case the use of both languages is the norm for these participants, and as such they might find it difficult to answer a question about the exclusive use of one language, i.e. without code-switching. This interpretation, however, cannot readily account for why some questions were still more difficult than others. It is very likely that some tasks were inherently more difficult than others.

From the discussion of the data above, we can observe the following two tendencies. The first one is that most participants have reported that they are more proficient in Dutch than in MA. The second tendency is that participants who use MA more often have a higher proficiency in it than those who use it less. In the next section we discuss the implications of these tendencies to language shift in the case of MA.

### 5. Language use, language proficiency and language shift

As said earlier (chapter 1; 1.3), language proficiency and language use are two important factors in understanding language shift. It was noted that language shift is a change in the habit of using one language to the habit of using another language. The role of low proficiency in language shift was also highlighted. It was said that a reduction in the contexts of use of language will generally result in a reduction of proficiency in that language. In this section, we shall see to what extent our data can be interpreted as a sign of language shift from MA to Dutch.

In section 4 above, we have seen that most of the adolescents in the present study report a higher proficiency in Dutch than in MA. With respect to proficiency in MA, we observed a range in the scores of these adolescents, whereas their proficiency in Dutch remained relatively high. Such a range has been reported to characterize dying languages, as in the case of East Sutherland Gaelic (ESG) (Dorian 1981: 118), where this continuum was not found for English, the dominant language of ESG/English bilinguals. In the case of MA, not all adolescents reported the highest proficiency score for their Dutch, and hence a continuum, although with a narrower range, was found for Dutch proficiency as well. If we leave the participants who were aged about nine when they came to the Netherlands, and/or those who report a relatively high frequency of use of MA, we are left with participants whose proficiency in MA is quite low.

The general picture that we drew is that participants who use MA more frequently should be expected to have a higher proficiency in it than those who do not use it as frequently. This frequent contact with MA can take place in the country of immigration or in the home country of the parents, as in the case of participants 4 and 24 who were sent back to Morocco for 3 and 5 years respectively.

Language use is also what makes a language vital. In this sense, dealing with the question whether there is any shift in progress from MA to Dutch is the same thing as dealing with whether the community that identifies MA as its native language is reducing its use of MA. This reduction in use of MA would have to be compensated for by the use of the competing language, namely Dutch. We will look at this issue from the perspective of maintenance of MA, i.e., by trying to answer the question whether MA has any chance to remain in use in the Netherlands.

It should be clear by now that in order for MA to survive in the country of immigration, or elsewhere, it has to be used. There are at least two ways in which MA use can be safeguarded. One of these is for the second generation adolescents,



as well as for subsequent generations, to go back to Morocco for significant periods of time in order to improve and/or acquire MA. This possibility can be rejected on the grounds that it is not realistic. It is a costly way, both financially and time-wise. Of the twenty five adolescents investigated in the present study, only two participants were sent to Morocco, supposedly to learn MA and be acquainted with 'their' home culture. For lack of information, we cannot even say that the primary purpose of their return to Morocco was language and culture. They might have been sent back for other reasons. Furthermore, it is important to know whether second generation adolescents, once they become parents themselves, will still feel the need to send their own children back to Morocco for the reasons mentioned above. One might think that there is no reason why they would not. One should bear in mind that once these second generation adolescents grow up, they would have their own homes in the Netherlands, unlike their parents, the first generation immigrants, who left a home in their country and are constantly longing to return to it. Moreover, the first generation immigrants have more possibilities of sending their children back to Morocco, because they have so many contacts in this country, and a home to which their children could return if they wanted to.

The second way in which MA can be prevented from losing territory in the Netherlands is more directly related to language use. In some cases, a language can lose as many domains, but remain used in highly elevated circles, like religious ceremonies (Campbell and Muntzel 1989: 185). In the case of MA, a language without a written tradition, it is hard to imagine that it will end up being used in any formal contexts in the Netherlands, or in religious circles, since it is not used in these circles to begin with.

In chapter 1 (section 1.3), we saw that there are different levels at which language shift can occur, namely at the individual level, at the group level, and at the level of a domain (of language use). None of the participants investigated in the present study has shown evidence of a complete shift to Dutch. Some participants, however, did report an exclusive use of Dutch with younger siblings. On the whole, there is no evidence that there is a completed shift at any level. What is evident is that there is a large presence of Dutch in the language profile of Moroccan adolescents, and that MA is not used in any context without there being an amount of Dutch use as well.

It should be emphasized that there is not conclusive evidence that MA will necessarily be abandoned by its speakers. This abandoning, as we have seen, is usually determined by factors external to language, and which are beyond the scope

of the present work. One can draw a tentative conclusion based on facts reported for other languages in a similar situation to MA, and, more importantly, based on patterns of language use and language proficiency of second generation adolescents who acquired MA as a first language. This tentative conclusion is that speakers of MA who are born and/or live in the Netherlands for a long time, and who use Dutch more frequently than MA are very likely to be undergoing a language shift process from MA to Dutch. This possible shift does not have to occur within one generation of speakers. It can take two, three or even more generations to be completed. A similar conclusion was drawn by Extra and de Ruiter (1994), who, after presenting a survey of the literature on language proficiency and language choice in the case of MA noted that the situation of Moroccan children is very likely to be conducive to a shift from MA to Dutch. This possibility will become more evident when we look at the results obtained from tests and experiments that the participants took part in. These results will be used to back up this observed tendency, and to add more support to the participants' own ratings concerning their proficiency in MA.

## 6. Conclusion

This chapter dealt with the sociolinguistic situation of MA in Morocco and in the Netherlands. The position of MA in Morocco was analyzed by looking at other languages with which MA co-exists, namely Berber, French, Spanish, and English. MA in the Netherlands was discussed in relation to HLI programs for Moroccan children and in terms of proficiency in and use of this language reported in the literature.

The background of the experimental group and the control group was also presented. The language behavior of the experimental group was analyzed in detail in order to see what indications there are, if any, of a language shift from MA to Dutch. It was argued that Moroccan adolescents are more likely than not to be undergoing this process of language shift, although this might take generations to be completed, or at least to become more visible.

To close the present chapter, a limitation on the present investigation has to be noted. This limitation is the lack of a group with a similar age and similar circumstances to the experimental group. Gal (1989: 156), for example, underlines the importance of a comparison between two similar groups throughout different periods of time, for example a second generation and a third generation, in providing reliable tools for language shift measurement. The importance of such a comparison is that it allows for a distinction between age-dependent patterns of

language use, and patterns which are socially determined, i.e. those that are due to a language shift process. Having only one group as a source of data, one cannot know if that group will change its behavior with age. The only way to know whether such a change will take place is by looking at a group similar in age and circumstances (i.e. in an immigration context). The limitation discussed above makes more research on the Moroccan community imperative in order to substantiate the claim that there is a process of language shift from MA to Dutch.



## Chapter 3

### Plural formation in MA

#### 0.Introduction

Plural formation in MA is a relatively complex process; in fact, one cannot even speak of rules in plural formation in the case of MA, as one would in languages with a transparent system of plural formation. In English, for example, turning a singular form into a plural one is usually done by the suffixation of a plural morpheme /s/ to singular nouns<sup>1</sup>. In the few cases of irregular plurals in English it might be necessary to learn the plural form together with the singular form. MA on the other hand, presents a very different picture to the analyst and the learner: there are more than forty types of plural nouns, and it is usually not possible to say which singular form takes which plural form, as will be explained below. In a situation where learners are presented with reduced<sup>2</sup> and insufficient input, one can expect difficulties to arise in areas of irregular morphology, such as plural formation.

The primary goal of this chapter is to investigate the process of plural formation among second generation adolescents and to what extent this process is susceptible to language loss. The choice of plural formation is motivated by the following reasons. First, it offers a possibility to see to what extent reduced input can affect a complex morphological system such as plural formation in MA. Second, it allows one to see how learners compensate for lack of knowledge of plural formation processes. A third reason is the opportunity to look into how uniform or diverse the learners are with respect to the strategies they resort to in situations of restricted input.

The present chapter is organized as follows. Section one is a survey of plural formation in MA. In section two we present the plural formation test. The results of this test are given in section three. Finally section four is a discussion of the results of the test and their implications for language loss of MA in the Netherlands.

---

<sup>1</sup>The question of which of the phonetic variants [s] ([kæts]), [z] ([bægz]), and [əz] ([dæʒez]) might be the 'underlying' morpheme is not important here.

<sup>2</sup>We will be using the terms 'reduced' and 'restricted' interchangeably to refer to amount of language input (as measured by how often a speaker hears a language) and to the domains where this language is used (e.g. the home, the school, etc.).

## 1. Plural formation in MA

In his book on the grammar of MA, Harrell (1962) devotes 28 pages out of 215 to the discussion of plural formation (101-128). The present section will be based on this discussion, for the simple reason that it is informative enough and serves the purpose of showing how complex plural formation is in MA. It should be immediately said that the goal of the present chapter is not to analyze the plural formation process in MA; rather, it aims at giving an idea of the nature of this process.

Harrell applies the traditional classification of Arabic plurals into sound plurals and broken plurals. Sound plurals are relatively regular: to form a sound plural, a suffix is added to a singular noun without changes in the stem of the noun. For example, the plural equivalent of the singular word *nežžar* "carpenter" is *nežžara* which involves only the addition of 'a' to the singular noun. Broken plurals, on the other hand, are formed through changes in the stem of the singular noun with or without the addition of a suffix. An example of a form undergoing stem alteration without suffixing is the singular form *bermil* "barrel," which becomes *bramel* in the plural. An example of a form undergoing both stem alteration and the addition of a suffix is *ktab* "book", which becomes *ktuba* or *ktub* in the plural.

The manner in which plural formation is presented in Harrell deserves comment. His starting point is the presentation of a plural pattern, and then the different types of singular nouns that take this pattern. This makes Harrell's discussion one of a purely descriptive nature: it is not possible to take a singular form and predict what type of a plural form it will take. What is possible to do is to draw lines of associations between singulars and their corresponding plurals.

The relation of singular to plural is not one to one, but one to many. For example *HiT* "wall" is pluralized as *HyuT* with a plural pattern CCuC. This pattern is also that of *hyuš*, the plural form of the word *hiša* "monster". Similarly, the same singular pattern CVC, which is that of *HiT* above, corresponds to a plural pattern different from CCuC, e.g. *žil* "generation" has *žyal*, with the pattern CCaC, as a plural. Harrell's approach is a convenient one, but not necessarily easier or more difficult than an approach which would take singulars first and then group the plurals that correspond to each pattern of singular words.

Regardless of the approach one might prefer, the complexity of the plural formation issue might imply that the learner will have to store the plural lexical form in addition to the singular one.

## 1.1 Sound plurals

There are three sound plural endings in MA which are listed in Harrell (1962: 1) '1) '-in', 2) '-a', and 3) -(a)t'. 1) The suffix '-in' is attached mostly to adjectives (*ferHan* "happy" *ferHanin*,) participles (*xeddām* "working", *xeddāmīn*,) and relational adjectives, or 'nisba's (e.g. *žanubī* "southern" *žanubīyyīn*). There are still eight word classes that take the '-in' plural suffix as well as other words which Harrell qualifies as 'non-patterned'.

2) '-a' is mostly attached to a limited number of nouns and never to adjectives. The nouns that take this suffix are arranged into three classes, all of them referring to persons with "a professional or habitual activity" (p.105). The first two classes are made up of a relatively large number of nouns. The first class is made up of nouns with the structure CVCCaC<sup>3</sup>, (where the first vowel is a schwa), as in *bennay* "mason" and *beqqal* "grocer" to which the respective plurals *bennaya* and *beqqala* correspond. The second class is made up of nouns with the following pattern: CCVCCi. This class is exemplified by nouns like *bnadri* "tambourine player" and *flayki* "boatman", which form their plurals as *bnadriya* and *flaykiya* respectively. The third class contains fewer nouns than either of the two other ones. It is made up of quadriliteral nouns like the noun *SemSar* "broker, agent" which forms its plural with the addition of '-a' to the stem: *SemSara*, and *gezzar* "butcher" with the corresponding plural *gezzara*).

3) The suffix '-(a)t' occurs more frequently with nouns than with adjectives. All diminutive forms take this suffix in the plural, as illustrated by the following examples (Harrell, 1962:107): *bnita* "little girl" *bnitat*; *ydiḍa* "little hand" *ydiḍat*, *qdira* "little pot" *qdirat*, etc. A very large number of nouns from various classes and ending in 'a' take the suffix '-t' in the plural. These nouns can be nouns of unity from collectives (e.g. *xuxa* "peach" *xuxat*, where *xux* is collective noun meaning "peaches"), nouns ending in '-iya' (e.g. *hdiya* "gift" *hdiyat*), nouns of the pattern CVCCaCa (e.g. *xebbaza* "woman baker" *xebbazat*), nouns of instance (e.g. *defea* "a push" *defeat* from *dfeε* "to push"), nouns of the pattern mCaCCa (e.g. *mdabza* "quarrel" *mdabzat*, muCaCaCa (e.g. *mušawara* "consultation" *mušawarat*, tCeCya (e.g. *teezya* "condolence" *teezyat* tCeCCiCa (e.g. *tfernisa* "grin" *tfernīsat*).

---

<sup>3</sup>We will be using the CV (consonant vowel) notation to refer to morpheme or syllable structure instead of the measures derived from the verb *feel* "do" which are common in traditional grammars of Arabic, including Harrell 1962.

## 1.2 Broken Plurals

One of the most common patterns among broken plurals is the pattern CCaCeC, which accounts for more than half of all broken plurals in MA (Harrell 1962: 113). The singular nouns that take this pattern in the plural are usually made up of four consonants and begin with CeCC- (e.g. *fendeq* "hotel" *fnadeq*) or CoCC- (e.g. *konnaš*<sup>4</sup> "notebook" *knaneš*). Some singular nouns with three consonants or less also take this pattern, like *rDuma* "bottle" *rDayem*, *riHa* "odor" *rwayeH*, *Haža* "thing" *Hwayež*, etc.

Another broken plural pattern Harrell deals with is the pattern Ccac, which he traces back to the following triconsonantal singular patterns: 1) CeCC/CoCC (e.g. *bent* "girl" *bnat*; *moxx* "brain" *mxax*), 2) CCiC (e.g. *nsib* "(brother) in law" *nsab*), 3/4) CCeC/CCoC (e.g. *žmel* "camel" *žmal* (but see section 2 below), *š-yol* "work" *š-yal*), 5/6) CeCCa/CoCCa (*keəba* "ankle" *keab*; *γorza* "stitch" *γraz*). Some examples of singular nouns that are made up of less than three consonants and which take the plural pattern Ccac are: *bir* "well" *byar*, *muža* "wave" *mwaž*, *riH* "wind" *ryaH*.

The plural pattern CCaCi corresponds mostly to the singular patterns CeCCa/CoCCa (e.g. *xenša* "sack" *xnaši*; *noqTa* "point" *nqaTi*). There are singular nouns with other patterns, which take the Ccaci plural pattern. Some examples are *derri* "boy" *drari*, *mexfiya* "kind of platter" *mxafi*, *seqqaya* "fountain" *sqaqi*, *dalya* "vine" *dwali*, *tagiya* "skull cap" *twagi*, *Hasi* "well" *Hwasi*. The following nouns also take the CCaCi plural pattern and share a similar initial syllable (Ci-): *lil(a)* "night" *lyali*, *riHiya* "(woman's) slippers" *rwaHi*. The initial syllable is also the same in the nouns *kura* "ball" and *zubya* "brazier pit" which take the plural forms *kwari* and *zwabi* respectively.

The plural form CCuC corresponds to singular nouns with the patterns CeCC (e.g. *qelb* "heart" *qlub*), CCeC (e.g. *ežel* "calf" *ežul* (but see section 2 below); other nouns that take the pattern CCuC in the plural are *Delea* "rib" *Dluē*, *drae* "cubit" *drue*, *mdina* "city" *mdun*, and *šahed* "witness" *šhud*, *sfina* "ship" *sfun*, *əadel* "notary" *ədul*.

The plural pattern Ccuc also corresponds to singular words with a vowel 'i' or 'a' after the initial consonant. Examples of these words are *bit* "room" *byut*, *hiša* "animal/monster" *hyuš*, and *Ras* "head" *Ryus*.

The plural pattern CCuCa is closely related to the pattern CCuC dealt with above. A number of singular words take both CCuC and CCuCa in the plural, like *ktab* "book"

---

<sup>4</sup>Harrell uses both 'o' and 'u' in his notation. We will follow his usage in quoting his examples. In our own notation, however, the vowel 'u' will be the one used, since 'o' does not have a phonological status in MA (see chapter 5).



*ktub/ktuba*; *dik* "rooster" *dyuk/dyuka*. Some of the nouns that take Ccuca as a plural pattern have the following singular patterns: Ccec (e.g. *kfen* "shroud" *kfunu*, *Dfer* "(finger) nail" *Dfura*), CeCC (e.g. *žerf* "cliff" *žrufa*), CoCC (e.g. *moxx* "brain" *mxuxa*), CCeCC (e.g. *mqeSS* "scissors" *mquSa*), CiC (e.g. *dib* "wolf" *dyuba*).

The plural pattern CCaCa corresponds mostly to the singular pattern CeCCi (e.g. *Hewli*<sup>5</sup> "sheep" *Hwala*), CoCCi (e.g. *korsi* "stool" *krasa*), and CuCi (e.g. *buži* "spark plug" *bwaža*).

The plural pattern CoCCaC corresponds mostly to nouns of the pattern CaCeC (e.g. *kafer* "unbeliever" *koffar*); some words that have a different pattern in the singular and which take the CoCCaC pattern in the plural are *HaDi* "guardian" *HoDDay*, *nayeb* "representative" *nuwwab*, *qayed* "judge; mayor" *quyyad*, *Hmeq* "crazy" *Hummaq*.

The plural pattern CiCan "corresponds almost exclusively" to the CaC or CuC pattern of singular words (e.g. *bab* "door" *biban*, *tur* "bull" *tiran*).

The plural pattern CoCCan and CeCCan have corresponding singular nouns with at least five patterns: 1) CCaC (e.g. *blad* "country" *boldan*), 2) CCiC (e.g. *šrik* "partner" *šorkan*, 3) CCiCa (e.g. *xlifa* "caliph" *xolfan*, 4) CCuC (e.g. *xruf* "lamb" *xerfan*), and 5) CaCeC (e.g. *Hažeb* "eyebrow" *Hužban*).

Harrell adds a list of words 'with final-weak roots', i.e. with a vowel in the end, which take the pattern CoCCan/CeCCan in the plural. These can easily be accounted for if they are represented as ending in a semi-vowel instead of a vowel; thus *hri* "granary" will be represented as *hriy* and as such would be aligned with the pattern CCiC dealt with above. Other singular words that take the plural patterns CoCCan/CeCCan are *saei* "beggar" *soeyan* and *Raei* "shepherd" *roeyan*.

The plural pattern CuCeC "corresponds exclusively to adjectives of color and defect" (Harrell, 1962: 124). Some of these adjectives are *byeD* "white" *buyeD* (but see section 2 below), *qree* "afflicted with scalp disease" *quree*.

The plural pattern CCeC has a number of corresponding singular forms, and are simply put next to each other in Harrell, without an attempt to group them in a category. Some of these singular nouns are *buTa* "cask, barrel" *bweT*, *qolla* "jug" *qllel*, *xima* "tent" *xyem*, *xorSa* "metal ring (different from a finger ring)" *xreS*, and *emed* "column" *emed*.

Other broken plural patterns dealt with in Harrell are CuCaCa (e.g. *Daeif* "poor, miserable" *Dueafa*), CeCCa/CoCCa (e.g. *bSir* "blind" *beSra*, *Tbib* "physician, doctor"

---

<sup>5</sup>This is Harrell's transcription. In our transcription this word is 'Huli'. Both pronunciations can be heard in MA.

*Tobba*<sup>6</sup>, CCaCCa (e.g. *tunsi* "Tunisian" *twansa*), ?aCCiya (e.g. *nbi* "prophet" *?anbiya*), CuCuC (e.g. *ders* "lesson" *durus*), CCI (e.g. *šelya* "chair" *šli*), CaCaCi (e.g. *naHiya* "region, environment" *nawaHi*), CCiC (e.g. *meeza* "goat" *meiz*). To end his listing of plural patterns, Harrell provides 25 nouns with plural patterns that cannot be categorized, under the heading 'some miscellaneous broken plurals'. One of these is relevant to the present work, namely the form *γrab* "crow" to which he gives *γrobba* as a corresponding plural form (see section 2).

However complex plural formation in MA might seem to be, regional variation adds to its complexity. Harrell's account of plural formation is based mostly on the MA variety of Rabat, and as such is more homogeneous than one which would take other varieties as sources of data. The forms sensitive to regional variation and relevant to the plural formation test will be discussed in more detail in the section below.

## 2. Plural formation test

### 2.1 Participants and procedure

The plural formation test was taken by 20 participants from the second generation group, and all of the 30 participants from the control group. The test was taken individually. Participants were instructed to give the plural equivalent of the singular noun that the examiner gave orally. More than one answer was possible and actually given in many cases in both groups. The answer(s) were written down by the examiner.

### 2.2 The test

A list of 30 singular words was read to each participant. 25 stimuli were also used in the cue-validity test, which was taken after the plural formation test. Taking the same words for the two tests had the advantage of saving time in explaining the meaning of a word if a participant did not know it. For example, a number of participants in the second generation group turned out not to know the meaning of *γrab*, the MA word for "crow". The list is representative of 13 patterns of plural formation in MA, as shown in table 1:

---

<sup>6</sup>This form is also pluralized as '?aTibba', the same plural form in SA.

Table 1: List of singular words used as stimuli and their corresponding plural forms given by the control group

Pattern	Singular	Plural	Gloss
<b>Broken plurals:</b>			
1. CCuC(a):	<i>sbeε</i> <i>kelb*</i> <i>qerd</i> <i>nmer</i> <i>dubb</i> <i>fil</i> <i>nser</i> <i>dib</i> <i>εzel</i> <i>zmel</i> <i>ktab</i> <i>qeTT</i>	<i>sbuea</i> <i>kluba</i> <i>qrud(a)</i> <i>nmura</i> <i>dbuba</i> <i>fyula</i> <i>nsura</i> <i>dyuba</i> <i>εzula</i> <i>zmula</i> <i>ktub(a)</i> <i>qTuT</i>	lion dog monkey tiger bear elephant eagle wolf bull camel book cat
2. CCaCeC:	<i>teeleb</i> <i>Helluf</i> <i>ferruž</i> <i>mekteb</i> <i>SenDuq</i>	<i>tealeb</i> <i>Hlalef</i> <i>frarež</i> <i>mkateb</i> <i>SnaDeq</i>	fox pig rooster desk box
3. CCaCa:	<i>Huli</i> <i>kursi</i>	<i>Hwala</i> <i>krasa</i>	sheep chair
4. CeCCan:	<i>εewd</i> <i>γrab</i>	<i>εewdan</i> <i>γerban</i>	horse crow
5. CCiC:	<i>Hmar</i>	<i>Hmir</i>	donkey
6. CCuC:	<i>HiT</i>	<i>HyuT</i>	wall
7. CCaC:	<i>kelb*</i>	<i>klab</i>	dog
8. CiCan:	<i>bab</i>	<i>biban</i>	door
9. CuCeC:	<i>byeD*</i>	<i>buyeD</i>	white
<b>Sound plurals:</b>			
10. '-at':	<i>radyu*</i> <i>stilu*</i> <i>garrru*</i>	<i>radyuwat</i> <i>stiluwat</i> <i>garrruwat</i>	radio pen cigarette
11. '-in':	<i>yedd</i> <i>byeD*</i>	<i>yeddin</i> <i>beyDin</i>	hand white
12. '-a':	<i>Tellab</i>	<i>Tellaba</i>	beggar
13. '-s':	<i>radyu*</i> <i>stilu*</i> <i>garrru*</i>	<i>radyus</i> <i>stilus</i> <i>garrus</i>	radio pen cigarette

\* Word with more than one plural pattern.

Some of the stimuli turned out to have regional variants. The word for "dog" is *kelb* in Casablanca and Oujda, but it is *djru* in Tangier, although *kelb* is also known there. The word for "beggar" *Tellab* turned out to be less known in Tangier and Casablanca than in Oujda. Instead, the word *seeey* is the commonly used equivalent of "beggar" in the former two cities.

Another regional aspect of the stimuli is the different plural forms for the same singular word. The plural for the word *kelb* "dog" given by 8 out of 16 participants from Casablanca in the control group is *kluba*. All four participants from Oujda and 9 participants out of 10 from Tangier gave the form *klab*. The plural equivalent of *byeD* "white" also turned out to be different in the three regions. The form *beyDin* was given by 14 participants from Casablanca, 1 participant from Tangier, and 1 participant from Oujda. The form *buyeD* was given by 8 participants from Tangier, 2 from Oujda, and 1 from Casablanca. 1 participant from Casablanca gave the form *byuDa*, 1 from Oujda and 1 from Tangier gave no response.

Other plurals that turned out to be different in the three regions are the plural equivalents of *radyu* "radio" *stilu* "pen", and *garru* "cigarette". The plural for *radyu* given in Casablanca was *radyuwat* (15 participants) and *rwadyu* (1 participant); in Oujda it was *radyuwat* (4 participants), and in Tangier it was *radyus* (5 participants) and *radyuwat* (5 participants). The plural equivalent of *stilu* was *stiluwat* in Casablanca (16 participants), *stiluyat* (3 participants) and *stiluwat* (1 participant) in Oujda. In Tangier, the plurals given were *stilus* (6 participants) and *stiluwat* (4 participants). The plural for *garru* in Casablanca was *gwarru* (15 participants) and *garruwat* (1 participant); in Oujda it was *garruyat* (2 participants), *gwarru* (1 participant) and *gwarra* (1 participant). The variant most used in Tangier was *garrus* (4 participants), followed by *grarus* (2 participants), *garriwat* (2 participants), *garruwat* (1 participant) and *graru* (1 participant).

The criteria for taking a plural form as the norm against which to compare data from the second generation group are discussed below.

### 3. Results

Before proceeding to the actual results of the test, a few clarifications are needed. First, the decision to take one plural form as the norm is based on the data obtained from the control group. However, as explained above, it is not uncommon to obtain more than one answer from this group. This was due in part to the following factors: regional variation (see section 2 above), the 'interference' from Standard Arabic in the test: some participants kept giving answers in Standard Arabic in spite of the constant

reminder that the test had to do with MA, the language they speak at home. In the case of regional variation, all answers were considered correct, provided they were given by at least half of the participants from that region: for example, *klab* as well as *kluba* (the variant most common in Casablanca) were taken as the norm. In the case of SA (Standard Arabic) variants, these were simply ignored; for example, the plural form *kilaabun* (with a long vowel /aa/) was not considered correct, even if it is the correct SA plural for *kalbun* "a dog". The third factor in the variation among participants was attributed to mistakes, perhaps caused by time pressure, and the test situation. In this case, the answer that was chosen as the norm was one which was chosen by at least half of the participants.

Another issue regarding what is and what is not a correct answer has to do with the definite article 'l-': some plural forms were given together with this article. These were considered correct, if the conditions listed above were satisfied. For example, the form *leHmir* "the donkeys" was considered the same as *Hmir* in the statistical analysis below.

Finally, when the same participant gives more than one answer, it is the correct answer which is entered for the analysis. This was done in order to minimize any non-genuine variation among the second generation group. That is, if the incorrect plural rather than the correct one was taken, part of the results would not reflect the actual knowledge of the participants, but a selection bias.<sup>7</sup>

The answers of the control group and the target group were divided into categories, which allows one to see how many types of answers (or categories) were given for each word. This, however, does not say anything about the distribution of participants over these categories. To illustrate, let us suppose that a singular form has elicited five plural types or categories in the experimental group. We cannot know how many forms there are in each category. In this example, it might be the case that four categories are instantiated by one form each, and the fifth is instantiated by sixteen (maximum concentration), or that each of the five categories is instantiated by four forms (maximum dispersion). This is what the concentration/dispersion coefficient

---

<sup>7</sup> This decision might obscure an interesting phenomenon in language loss situations, namely the difficulty or ease of accessing lexical representations. It would be interesting to know whether a participant recovered the correct form before the incorrect one or vice versa. Unfortunately, this was not planned before the tests were given, which makes it difficult to know the exact order in which the forms were given by a participant.

does<sup>8</sup>: it indicates how dispersed or concentrated the answers are. The closer the coefficient is to 1.0, the higher the uniformity between the answers for a given form, and vice versa (Columns 2 and 3 in table 2). It should be noted that the coefficient in question does not say anything about what is wrong and what is correct. This is done by another procedure which is discussed below.

The answers that the control group gave were categorized into right and wrong according to the criteria discussed above, which take into consideration the factor of regional variation and the interference from SA (Standard Arabic). For each word the percentage of participants that gave a correct plural form was calculated.

The number of categories given for each word, the concentration/dispersion coefficient, and the percentage of correct answers per group are given in table 2.

An interesting observation about table 2 is that even if the number of categories of plurals of a particular group is similar, the concentration coefficient can be very different. For example, for the word *stilu* 4 types of plurals were given in each group, but the concentration coefficient is different: in the control group there was more agreement about the types of plural than among the target group: In the former, the answers were as follows: 21 participants chose *stiluwat*, 6 gave *stilus*, 2 gave *stiluyat* and 1 gave *stilawat*, and in the latter group, the answers were more 'spread': 8 participants chose *stiluwat*, 6 chose *stiluyat*, 4 chose *stilus*, and 2 chose *stilawat*. A similar case is word 26 *garru*. The number of categories is even higher in the control group than in the experimental group, but the concentration coefficient is higher in the control group.

In addition to these coefficients two t-tests were conducted to compare the two groups: one on the pairs of coefficients which turned out to be significant at the .01 level ( $t = -11.36$ ;  $DF = 29$ ;  $p < .000$ ), and the second one on the pairs of categories or types of plurals per group which also turned out to be significant at the .01 level ( $t = 6.95$   $DF = 29$ ;  $p < .000$ ).

To have a general idea about the role of proficiency in the command of plural formation in MA, table 3 presents the percentage of correct answers and the proficiency score of each participant from the experimental group (Participants 5-8 and 21 did not take part in the plural test).

---


$$C = \frac{\sum F_j - N}{N \cdot k - N}$$

applies to a nominal frequency distribution, ordered by descending

frequencies with,  $F_j$ : the cumulative frequency of category  $j$ ;  $N$ : the number of cases;  $k$ : the number of categories (Schils 1996).

Table 2: Concentration coefficient of plural forms given by the experimental group (column E) and the control group (column C).

Word	Number of categories		Concentration coefficient		Correct answers	
	E	C	E	C	E	C
1. <i>qeTT</i>	10	10	.7167	.7815	35	63
2. <i>Huli</i>	10	2	.6955	.9667	45	97
3. <i>sbee</i>	7	1	.7833	1.0000	50	100
4. <i>kelb</i>	7	4	.7714	.8556	75	97
5. <i>eewd</i>	10	10	.6955	.7741	45	70
6. <i>qerd</i>	7	3	.7500	.8167	75	100
7. <i>Hmar</i>	9	2	.7437	.9667	60	100
8. <i>nmer</i>	8	2	.7444	.9667	50	97
9. <i>dubb</i>	10	9	.6682	.8042	05	47
10. <i>fil</i>	11	7	.6500	.8611	25	70
11. <i>γrab</i>	13	11	.6125	.7667	20	63
12. <i>nser</i>	9	3	.7500	.9500	55	93
13. <i>dib</i>	9	8	.7625	.8429	50	63
14. <i>teeleb</i>	12	3	.6727	.8167	25	67
15. <i>Helluf</i>	8	3	.7857	.9500	55	93
16. <i>ežel</i>	9	1	.7150	1.0000	45	100
17. <i>ferruž</i>	8	2	.7714	.9667	50	97
18. <i>žmel</i>	8	2	.7857	.9667	55	97
19. <i>kursi</i>	4	3	.8833	.9500	80	93
20. <i>HiT</i>	6	3	.7571	.8833	75	97
21. <i>kiab</i>	6	2	.7300	.9000	80	100
22. <i>mekteb</i>	11	6	.6750	.8267	40	80
23. <i>radyu</i>	7	4	.7071	.8222	55	97
24. <i>stilu</i>	4	4	.6667	.8333	90	100
25. <i>SenDuq</i>	6	1	.8083	1.0000	60	100
26. <i>garru</i>	7	8	.6667	.7810	30	73
27. <i>bab</i>	5	2	.8750	.9667	80	97
28. <i>yedd</i>	5	9	.8750	.8375	80	77
29. <i>Tellab</i>	12	9	.6591	.7958	20	50
30. <i>byeD</i>	7	5	.7833	.8250	70	90

Table 3: Mean proficiency scores (in speaking skill) and percentages of correct answers.

Participant	Proficiency score	% correct
01	3.00	30
02	3.10	40
03	2.00	10
04	4.20	57
09	2.90	20
10	5.00	53
11	1.70	10
12	4.30	83
13	4.10	83
14	4.50	53
15	4.80	23
16	4.00	50
17	5.00	73
18	4.70	83
19	4.50	63
22	3.10	40
23	5.00	63
24	4.25	90
25	3.40	77
26	3.70	57

The correlation of the mean proficiency scores with percentage of correct answers turned out to be significant at the .01 level ( $R = .6619$ )

#### 4. Discussion

A close look at the results of both groups reveals some interesting characteristics of the experimental group. Some participants in this group relied heavily and incorrectly on a limited number of cues or strategies in plural forming. We will discuss these strategies in relation to the individual participants who resorted to them. For the purposes of the present discussion, we will refer to a strategy as a systematic way in which a participant proceeds to construct a plural. For convenience sake, and to avoid circularity, a strategy is considered systematic here if it is used by the same participant



at least in three cases (of wrong pluralization). Table 4 lists these strategies together with the participants who resorted to them.

A look at the language proficiency of the participants who wrongly relied on a given strategy reveals that these had low scores in both speaking and listening skills. Participant 3 who resorted to '-in' suffixation in 21 cases had a mean score of 2 (out of 5) in speaking and a mean score of 3.2 in listening. Participant 1 who relied on the same strategy in 9 cases had a score of 3 and 2.7 for the two respective skills. Participant 11 who resorted to '-at' suffixation in 11 cases had a mean score of 1.70 in speaking and a score of 2.8 in listening. Participant 22 who relied on the vowel alteration '-u-' in 10 cases had a mean score of 3.1 in speaking and 4.1 in listening, and obtained a mean score of 2.85 (out of 5) from the external judges (see chapter 2). Participant 12 who used '-un' in 12 cases seemed to be quite proficient in MA: she had a mean score of 4.3 in speaking and a mean score of 4.2 in listening. The judges, however, gave her a mean score of 3 out of 5. Participant 26<sup>8</sup> had a mean score of 3.7 for her proficiency in speaking and 3.4 in listening. Participant 15, who applied vowel alteration 'a--a-' in 10 cases, had a mean score of 4.8 in speaking and 5 in listening (judges 3.57). She seems to be a counterexample to the generalization that participants with low proficiency relied heavily on a given strategy.

The general indication is that participants with a low proficiency level tend to 'cling' to a small set of strategies, perhaps because they do not know any other ones. Other participants who gave wrong answers relied on a wider variety of strategies. These were perhaps not as 'desperate' concerning their language proficiency. They might know more plural formation strategies than the less proficient ones, but they have lost the associations between the singular forms and their corresponding plural forms due to the limited use of MA.

Another possible interpretation is that these participants who have a low proficiency and who resort to small numbers of strategies might simply be creating a new system of MA plural formation. However, due to the diversity of these strategies, it is difficult to think of them as having any real communicative value. It would be a

---

<sup>8</sup>The forms *radys*, *stilus*, and *garrus* which this participant gave with an '-s' suffix are correct in the variety of Tangier and Tetouan, but not in that of Oujda, where the parents of the participant come from. One might consider the possibility that participant 26 is accommodating to the speech of Tangier and Tetouan through contact with other people from this region. However, her narrative of the Frog Story gave no indications that this is the case. Hence, it is more likely that these forms are simply an instance of the overgeneralization of the '-s' suffix from Dutch, since the original variety of subject 26 is that of Oujda. In this variety, none of the forms used in the test takes an '-s' suffix in the plural.

Table 4: Plural formation strategies used by the experimental group

Suffixation: '-in'	1	2	'-a(u)'	'-s'	4	16	14 qiTun	23	22	Vowel change: '-u-', a-a'
3*			11	26						15
Hulin sbæin kelbin eewdin qerdin Hmarin nmarin dubbin filin	Huliyyin	qiTin Huliyyin	sebat kelba eewdat qerdat Hmara	qeTTs Hulis  leuds Hmars					sbue	asbae aklab acwad
γrabīn nsrin debbin teabilin Hellufin ežalin ferružin žmilin kursin HiTin	γrabiyyin		dubba fila γraba	dubbs γrabs	dubbun	filun γrabun nasrun dibun	dubbun	dubbun filun	dbub ful γrub nsur dbub	anmar  ayrab ansar
mektebin			diba teblitat ežla ferruža žemla kursiya HiTat ktubiyya mektebiya radyuya stiluwat SenDuqat garruwat lbabat veddat Tellabat beyDat	teclebs Helluffs  radyus stilus SenDuqs garrus Tellabs				tealbun	ežul žmul	aHlaf aežal afraž ažmal
Tellabin	Tellabin				radyatun	maktabun radyun				
									vdud Tullab	

\* Number of participant

strange speech community where speakers of the same variety have five plural forms for the same word, as in the case of the word *γrab* "crow" above<sup>9</sup>. One has to remember that we are dealing with a group of adolescents with a close age range and living in the same city. The interpretation that resorting to a limited number of strategies is a result of lack of knowledge of the other variants of the plural morpheme seems to be quite credible.

The overgeneralization of strategies discussed above could be interpreted as paradigmatic levelling (see chapter 1), whereby irregular paradigms become regularized, or reduced to fewer paradigms. As was said in chapter 1, such levelling is the result of restricted input, and characterizes situations of language loss and language death.

In the case of plural formation among second generation adolescents, the levelling that we can observe is at the level of individual speakers and not at the level of language. That is, different speakers overgeneralize different strategies, and as such, one cannot say that there is paradigmatic levelling in MA. One can go as far as asking whether there is anything like 'a plural formation process' in the speech of those who resorted to a limited number of strategies, i.e. those that were also shown to have a low proficiency in MA. The plural forms of these participants were given in response to the investigator's request. In spontaneous speech, there is reason to doubt that these same participants will produce the same plural forms they gave during the test. The point being made here is that participants with low proficiency in MA might have resorted to a limited number of strategies as a means of doing the test, or as a problem solving strategy.

Whatever reasons might be behind this phenomenon of the use of a limited number of strategies, two important observations are very relevant for the discussion of language loss in the case of MA. The first is that individual speakers use idiosyncratic means in plural formation in MA. Such individual triggering of language change was referred to as characterizing language variation in the case of minority languages, or languages whose speakers are undergoing a shift to the majority language (e.g. Mougéon and Beniak 1991).

---

<sup>9</sup>There is, of course, systematic variation in the speech of males versus females, young versus old, etc., in different language communities around the world. This is different from the case of MA discussed here, in the sense that in languages not threatened by loss, the variation usually has social meaning, is systematic, and can be accounted for by determining the variables behind such variation. In the case of MA, the group we are dealing with is quite homogeneous. As such it would indeed be strange to hear two speakers use different plural forms, without signalling any social differences, and without there being any systematic reason for the use of these different forms.

The second observation is that the speakers who resorted to the overgeneralization of a few strategies did so as a consequence of not having been exposed, at least not enough, to MA. That is, these speakers did not learn how plural formation works in MA. In this sense, their linguistic behavior regarding plural formation is a consequence of restricted input. One can obviously contest this interpretation on the grounds that we do not know the history of these speakers, and as such we cannot be sure that they have never learned the correct plural forms. The question remains as to whether they knew the correct plural forms at a point in time, and then ended up 'forgetting' them at the time of the test. It is unfortunate that such a possibility cannot be completely discarded. This problem is inherent in the design chosen for the present study (see chapter 1). Yet, we can still say that language input has been reduced and it is because of this reduction that the speakers in question cannot use the proper plural forms. This is regardless of whether they had learned MA plural formation at an earlier time or not; the result is the same, namely that there is a certain language attrition among low proficiency speakers of MA.

## **5. Conclusion**

Based on the results of the plural formation test, the following conclusions can be formulated. Firstly, evidence has been found for the phenomenon of variation within the second generation group, which has already been reported in the case of language proficiency (chapter 2). This variation is readily observed by looking at both the participants and the strategies used.

Secondly, a tendency has been found among participants of low language proficiency to rely on fewer plural formation cues or strategies, showing a preference for regularizing the morphology of their language (individual paradigmatic levelling). These two findings are to be expected in cases of restricted language input, which, as was said in chapter 1, characterizes minority language situations.

### **Sentence Processing in MA**

#### **0. Introduction:**

The goal of this chapter is to draw a comparison between the experimental group and the control group in terms of how they process sentences in MA. In particular, it aims at examining how each group makes use of the following cues in sentence interpretation: word order, animacy, number agreement, and word stress. This comparison will reveal what differences there are between the two groups, and, more importantly, what causes these differences. The two candidate factors that will be examined are the position of MA as a dominated language in the Netherlands and language internal processes of grammar simplification. That is, we will see how some differences in sentence interpretation are due to the influence of Dutch, as a dominant language and how MA is also undergoing a process of internal simplification independent of the influence of Dutch.

This chapter is organized as follows. Section 1 offers a brief review of the model selected for the analysis of sentence processing, namely the competition model. Section 2 is about the role of word order, animacy, number agreement, and word stress as cues for sentence processing in MA and Dutch, and how sentence processing is affected in bilingual situations in general. Section 3 deals with an experiment on cue-validity in MA in Morocco and in the Netherlands. The results of these experiments are given in section 4. Section 5 consists of a discussion of these results and their implications for language loss in the case of MA. The conclusion of the chapter is given in section 6.

#### **1. Cue validity studies on Dutch and MA: a review of the literature**

The competition model proposed by Bates and MacWhinney (1981, 1982, 1989), and MacWhinney, Bates, and Kleigl (1984) is an attempt to explain language performance by accounting for how language users/learners map language forms onto functions (language production) and how they map functions onto language forms (language comprehension). The view underlying this model is that languages vary in terms of the linguistic devices they have as well as in terms of how these

devices are put to use. An example of this is the interplay of word order and subject-verb agreement as cues to sentence meaning in Italian and in English (Bates and MacWhinney (1989: 11). Italian has a larger number of word order options (SVO, OSV, VSO, VOS, OVS, and SOV)<sup>1</sup> than English, which has a relatively rigid word order, usually SVO; the occurrence of OSV is also frequent in English relative clauses of the type 'the dog (that) the man saw was chasing a cat.' The order OVS is found usually in passive sentences of the type 'the cat (was) chased by the dog.' This results in a difference between the reliability of word order as a cue in agent identification: English speakers trust word order more than Italian speakers do, since, in English, word order is a reliable cue to sentence interpretation. The following imaginary restaurant dialogue, reproduced from Bates and MacWhinney (p.11), illustrates the flexibility of word order in Italian:

1. SVO: *Io mangerei un primo*  
I would eat a first course  
"I would eat a first course"
2. OSV: *La pastasciutta Franco la prende sempre qui.*  
Pasta Franco it take always here  
"Franco always orders pasta here."
3. VSO: *Allora, mangio anche io la pastasciutta*  
Well then I am eating also I pasta  
"Well then I am also eating pasta."
4. VOS: *Ha consigliato la lasagna qui Franco, no?*  
has recommended the lasagne here Franco, no  
"Franco has recommended the lasagna here, no?"
5. OVS: *No, la lasagna l'ha consigliata Elizabeth*  
No the lasagna it has recommended Elizabeth  
"No, the lasagna was recommended by Elizabeth."
6. SOV: *Allora, io gli spaghetti prendo*  
Well then I spaghetti am having  
"In that case, I'm having the spaghetti."

---

<sup>1</sup>Unless otherwise specified, the use of 'S' and 'O' in the discussion of word order refers to 'agent' and 'patient' respectively.

Bates and MacWhinney (1989: 13) explain that the bulk of the formal apparatus of the competition model is made up of 'probabilistic' rules, i.e. not discrete rules used in modular approaches to language, where each grammar component hands information to the next module in a discrete non-interacting way, and with the form "Use structure X if and only if semantic factors Y and pragmatic conditions Z are met." The power of the competition model lies in its capability to capture probabilistic mappings between form and function. The example of Italian and English cited above makes sense in this connection: the differences exhibited by speakers of Italian and speakers of English can be predicted on the basis of how linguistic cues operate in each language, i.e. in terms of the strength of these cues. This strength is itself a function of the availability, reliability and conflict validity of a given cue. Bates and MacWhinney (1989: 41-42) provide a concise definition of these three concepts. Below is a summary of their explanations.

A cue is available when it is present and informative in a given structure. In quantitative terms, the validity of a cue can be defined as "the ratio of the cases in which the cue is available over the total number of cases in a task domain" (McDonald 1986 in Bates and MacWhinney 1989: 41). Reliability of a cue has to do with the correct interpretation of a role (e.g. agent) that the cue in question provides. In numerical terms, this would mean the ratio of the correct interpretations of the cue to the total number of times it is available. Finally, the conflict validity of a cue is the result of how often a given cue wins over another competing cue. For example, in a language where the order NVN is usually interpreted as SVO, an agreement cue that favors the second noun (thus the interpretation OVS) would be in conflict with the word order cue. To have a numerical definition of conflict validity, the number of situations where one cue wins over another competing cue is divided by the number of competition situations in which that cue takes part.

The competition model has been chosen in the present study especially for the claim it makes about explaining language phenomena relating to language change and language loss on the one hand and to bilingualism on the other. The model is claimed to be capable of describing the synchronic as well as the diachronic level of a language, by analyzing the evolution of a language from one synchronic type to another. It also maintains that it can analyze language acquisition by children, and language loss by individuals or whole communities (Bates and MacWhinney 1989: 14). The competition model with its adoption of a quantitative approach offers a "means for characterizing what it means to be 'in between' structures," since, in a manner of speaking, it allows a quantitative formulation of how much of

a system there is in a structure. For example, the model makes it possible to know the degree of fluency a Dutch/English bilingual has in English. As such, it allows for comparisons between bilingual speakers in quantitative terms (see section 1.1 below).

The choice of the competition model in the present study is also motivated by the possibility it offers for a quantified analysis of sentence processing by second generation Moroccan adolescents living in the Netherlands. This quantification is very useful in comparing how speakers of MA in Morocco differ from speakers of MA in the Netherlands regarding how much use they make of each of the cues mentioned above. It is also useful in quantifying the transfer of cues from Dutch to MA.

The fact that Dutch and Moroccan Arabic are typologically very different languages offers a good opportunity to see what happens in contexts of contact between these two languages. Below is a brief survey of some of the studies that have applied the competition model to Dutch (McDonald 1987; Kilborn and Cooreman, 1987), to Arabic (Taman 1993), Montfort (1986) (in de Bot and Montfort 1988), and to bilingual situations involving language loss (Liu, Bates, and Li 1992).

### 1.1 Cues in Dutch

One of the experiments in McDonald (1987) was designed to find out about the use of word order, noun animacy, and case inflection cues in Dutch and English. The results of this experiment indicate that Dutch monolinguals rely most on case inflection in assigning the agent role to a noun, as opposed to English monolinguals, who were found to rely most on word order. Among Dutch monolinguals, word order, noun animacy, and case inflection were all significant in this experiment. Case inflection accounted for 45%, word order for 22% and animacy for 4% of the explained experimental variance. In terms of percentages of N1 choice, McDonald reports that the first noun was chosen 68% of the time in Dutch by Dutch speakers (p.395).

Another experiment in McDonald (1987) included NNV and NVN word orders, animacy, and case inflection. The items presented to monolingual and bilingual Dutch and English speakers were relative clauses. The results indicated that, in relative clauses with NVN word order, Dutch monolingual speakers relied significantly on all three cues, with the following percentages of explained variance for each cue (p.402): case inflection accounted for 46% of the variance, animacy for 7%, and word order (choice of N1 in NVN) for 7%. In relative clauses with



the order NNV, Dutch monolinguals also relied significantly on all three cues. The percentages of variance accounted for are 31% for case inflection, 9% for animacy, and 9% for word order (N1 in NNV word order).

Kilborn and Cooreman (1987) tested number agreement, word order (NVN, NNV, and VNN), and animacy in Dutch/English bilinguals. They found significant two-way interactions involving language (English/Dutch) and word order, and language and agreement. For Dutch, their results indicated that N1 was selected as agent 61% of the time in the pattern NVN, 59% in VNN, and 58% in NNV (Kilborn and Cooreman 1987: 423); these percentages were quite close to those reported by Heisterkamp-Wormer (1985: 27), which were: 66% in NVN, 70% in VNN, and 59% in NNV, thus indicating a difference of 12% in the pattern VNN, and 5% in NNV.

The other significant two-way interaction was language and agreement. Dutch participants chose N1 91% of the time when the verb agrees with the first noun (Ag1), 70% when the verb agrees with both nouns (Ag0), and 19% when the verb agrees with the second noun. Again, Kilborn and Cooreman report the similarity between these results and those communicated to them by de Bot, which were 95% for Ag1, 76% for Ag0, and 24% for Ag2. Agreement was found to be most important in agent identification, followed by animacy and word order. Regarding the use of animacy, there was no significant group by animacy interaction, which would mean that Dutch/English and English/Dutch bilinguals relied on animacy to a similar (low) degree in both Dutch and English.

Other studies have unanimously confirmed the superiority of agreement over animacy, word order, and stress in Dutch. For example, Heisterkamp-Wormer (1985) found the following order of importance of cues: verb/subject number agreement, animacy, word order, and stress. The role of agreement is also reported to be important in agent assignment by de Bot and Montfort (1988: 115). They give the following percentages of N1 choice under different agreement conditions:

Table 1: Interaction of word order by agreement in Dutch.

	Agreement		
	Ag0	Ag1	Ag2
NVN	0.83	0.97	0.18
NNV	0.56	0.95	0.25
VNN	0.90	0.94	0.28

De Bot and Montfort (1988: 116) report on another study by Montfort and Diederer (1986) on Dutch and English, where the same order of cues was found for Dutch, namely (from most important to least important) agreement, animacy, word order, and stress.

### 1.2 Cues in Arabic

Two studies at least have been done on Arabic using the competition model: Taman (1993), and Montfort (1986). Taman (1993) examines the use of case, gender agreement and animacy in the assignment of the agent function in sentences with two nouns and a transitive verb in SA (Standard Arabic). The participants, who were university students, in Taman's study relied most on gender agreement, followed by case, and animacy which was found to be the weakest cue. Word order was found to be a reliable cue only when no other cues were present.

Montfort (1986) examined the use of animacy, agreement, stress, and word order in MA, Turkish, and Dutch. For MA, he gave the following order of importance to the cues he examined (de Bot and Montfort, 1988: 117): 1) animacy, 2/3) agreement and stress, 4) word order. The Moroccan group was found to apply this same order of cues when interpreting Dutch sentences, thus resorting to a forward transfer of strategies, i.e. from mother tongue to second language. The overall percentage of frequency of N1 choice in MA was found to be 63%.

### 1.3 Cue validity, bilingualism, and language loss

The use of the competition model in quantifying bilingual processing strategies (e.g. forward transfer, backward transfer) has been put forward as an advantage of the model in question (Bates and MacWhinney 1989). McDonald's (1987) results indicate that Dutch/English bilinguals as well as English/Dutch bilinguals shift from

relying on their native language processing strategies to relying on those of their second language as a function of length of exposure (use) of the second language. Dutch/English bilinguals were found to shift from their reliance on (pronoun) case marking towards relying on word order as a function of the amount of exposure to and fluency in English. For word order, a very reliable cue in English, the group that was exposed longest to English (group D/E3 in McDonald's classification) was found to choose N1 in the English test 83% of the time, as opposed to D/E1 (the least exposed to English) which chose N1 73% of the time. The intermediate group (D/E2) was found to choose N1 80% of the time. The same phenomenon was observed for the English speakers learning Dutch: their reliance on word order decreased while their reliance on case marking increased as a function of their exposure to Dutch. For word order, the group least exposed to Dutch (E/D1) chose N1 89%, a percentage that decreased to 79% with the intermediate group (E/D2) and to 72% for the group that was exposed to Dutch the longest (E/D3). For case inflection, a cue much more reliable in Dutch than in English, although no percentages of N1 choice were given, McDonald (p.403) explains that the statistical significance of the case inflection cue decreases with amount of exposure to English: results for the D/E1 had a  $p < .001$  value, while the value for the D/E3 group was  $p < .05$ , indicating that this group has shifted from using mother tongue strategies to using those of the second language.

The use of the competition model in language loss studies is very limited. Liu et al. (1992) conducted an experiment to find out about cue configurations in Chinese-English bilinguals. As was the case with other studies, this one also reported a shift in cue usage depending on exposure and fluency in the second language. What Liu et al. added was the observation that bilinguals with Chinese as a mother tongue started using English strategies in interpreting Chinese sentences. This was found especially among the group of Chinese bilinguals who were exposed to English for a long time.<sup>2</sup>

---

<sup>2</sup> MacWhinney (1987: 322) mentions a personal communication with Bates about two immigrants, an American woman and a German woman, who shifted completely from using their first language strategies to using those of their second language. The first one moved to Italy as a young adult, and the second one emigrated to the United States as a child (no data were provided).

## 2. Cues in MA and Dutch

### Word order

The canonical word order in MA is either NVN or VNN. In the order NVN, the first noun can be subject (SVO) or object (OVS). An example of NVN with the function SVO is:

- (1) SVO    *Ali*    *kla*    *lxubz*  
              "Ali    ate    bread"

The interpretation of NVN as OVS necessitates the attachment of a pronoun clitic, which agrees with the object, to the verb, as in:

- (2) OVS    *lweld*    *šaf*    *-u*    *Ali*  
              the boy    saw    -him (masc.)    Ali  
              "The boy was seen by Ali/Ali has seen the boy"

Notice that if the agent 'Ali' is not overtly stated, the sentence is interpreted as SVO:

- (3)            *lweld*    *šaf-u*  
              the boy    saw-him  
              "the boy saw him"

The clitic 'u' is interpreted as a pronoun with an object function, and the subject (and agent) function is assumed by the noun *lweld* in the sentence above.

In the order VNN, the noun immediately following the verb is usually the agent of the sentence:

- (4) VSO    *kla*    *Ali*    *lxubz*  
              ate    Ali    bread  
              "Ali has eaten bread"

Word order in Dutch is quite flexible (Koster 1975, Kilborn and Cooreman 1987, De Bot and Montfort 1988). The canonical word order in simple active declarative sentences is SVO, an order attested in about 60% of written Dutch (De Schutter 1974: 52). However, Koster (1975) argues that SOV is the basic word order in Dutch, as it is the unmarked order in relative clauses and sentences with an auxiliary (see (5) below).

Other word orders are also found in Dutch; De Bot and Montfort (1988: 113) report that VSO is found in sentences with inversion, OSV in relative clauses, and OVS through topicalization of the object in the main clause

The types of word order attested in Dutch are illustrated in (5)

- (5) SVO: *Jan ziet de hond*  
           "John sees the dog"
- SOV: *Omdat hij zijn werk deed*  
       because he his work did  
       "Because he did his work"
- VSO: *Koop ik een boek, dan...*  
       buy I a book then ...  
       "If I buy a book, then..."
- Koopt Marie een boek?*  
       buys Mary a book  
       "Does Mary buy a book?"
- OVS: *Dit boek vind ik heel interessant*  
       this book find I very interesting  
       "I find this book very interesting"
- OSV: *De jongen die hij vond*  
       The boy that he found"

Unlike in MA, the order VNN is attested only in interrogative sentences and in the sentences with an inversion discussed above. This limitation on VSO in Dutch is due to the fact that Dutch is not a pro-drop language, and as such requires the subject position to be filled with a noun or a pronoun in declarative sentences.

Word order configurations present an interesting area of comparison between MA and Dutch. In MA, the two word orders most commonly used are NVN and VNN, whereas in Dutch these are NVN and NNV. In both languages, the order NVN is usually interpreted as SVO. In MA, the order VNN is interpreted as VSO, and in Dutch the order NNV is interpreted as SOV in subordinate clauses.

### **Animacy**

Animacy is used here to refer to the property of being capable of performing an action; thus, humans as well as animals are animate. The property of a noun as animate seems to play a major role in agent identification in MA (see below; see

also De Bot and Montfort 1988). In Dutch, animacy does play a role in agent identification, but this role is outweighed by agreement (see below). It was pointed out above (section 1.1) that Dutch monolingual speakers, and advanced Dutch as a second/foreign language learners rely more on agreement than on animacy.

### Agreement

In MA, subject-verb agreement takes two forms: number agreement and gender agreement, both expressed by a suffix on the verb. Every noun in MA has a gender. However, verbs do not always carry a gender marker. That is, by looking at the verb in isolation, the native speaker cannot always decide whether the subject of the verb is masculine or feminine. This is the case with verbs that have the following subjects: first person singular and plural, second person plural, and third person plural. For example, the subject in the sentences in (6) can be either masculine or feminine:

- (6)     *ana mšit*                      *huma mšaw*                      *ntuma mšitu*  
          "I    went"                      "they    went"                      "you (pl.) went"

With respect to the second person singular, the use of gender agreement depends on regional variation. In Oujda, a north-eastern city of Morocco, the case is usually that the verb bears a feminine gender marker when a female is the addressee, and no marker when the addressee is a male:

- (7)     *nta mšit*  
          "you (sing. masc.) went"

- (8)     *ntiyya (nti) mšiti*  
          "you (sing. fem.) went"

In Casablanca and Tangier, the verb form in sentence (8) would be used to address a male or a female person. Regarding the third person singular, all MA varieties distinguish between masculine and feminine as shown in (9):

- (9)     *huwa mša*                      *hiya mšat*  
          he went                      she went

Dutch does not make use of gender agreement between verb and subject, which explains why the verb in the following pair of sentences has the same form:

- (10) *Hij spreekt Italiaans*  
 "He speaks Italian"
- (11) *Zij spreekt Italiaans*  
 "She speaks Italian"

As said above, verbs agree in gender as well as in number with the subject of the sentence in MA. In Dutch, however, only number agreement is attested. In both languages, the verb carries a plural suffix when the subject is plural. The absence of this suffix is an indication that the subject is singular. For illustration, compare sentences (12a) with a singular subject with sentences (12b) which have a plural subject:

- |      |    |  |    |  |
|------|----|--|----|--|
| (12) | a. | <i>ana mšit</i><br><i>ik ging</i><br>"I went"    | b. | <i>Hna mšina</i><br><i>wij gingen</i><br>"we went"   |
|      |    | <i>huwwa mša</i><br><i>hij ging</i><br>"he went" |    | <i>huma mšaw</i><br><i>zij gingen</i><br>"they went" |

In MA, number agreement is more available than gender agreement; i.e., the verb always has a number marker which allows the speaker/hearer to unambiguously determine whether the agent or subject of a sentence is in the singular or plural. As was explained above, it is not always possible to know whether the subject/agent of a sentence is masculine or feminine by looking only at the verb. This difference might be important in a pro-drop language like MA, where sentences made up of the verb and its affixes and/or clitics are not uncommon; hence, if the speaker/hearer has only the verb morphology to rely on in identifying agents/subjects, the task of determining the number of the subject is more straightforward than the task of determining its gender.

## Stress

Stress in the present study refers to sentence stress, whereby one word, or rather one syllable therein, is made more prominent than the other ones in the same sentence. Little research has been done on stress in MA to define its role and location. Benhallam (1990: 93) reports that according to Abdelmassih (1973), stress in MA falls on the penultimate syllable, while according to Benkaddour (1982) it falls on the penultimate as well as syllables in other positions of the word,

depending on the type of syllable structure of the word. Benhallam (1990: 93) concludes that stress generally falls on the penultimate syllable (in more than 50% of the stimuli he used), but differs from Benkaddour (1982) on the nature of the conditions that determine the exact location of stress.

Read, Kraak, and Boves (1979) conducted a study on agent identification in Dutch in questions with an ambiguous wh-word, as a function of stress assignment. They found out that when the verb is stressed in a wh-question of the form *Wie zit het meisje achterna?* the noun *meisje* is interpreted as agent ("who is the girl chasing?") whereas when the noun is stressed, the wh-word is interpreted as agent ("Who is chasing the girl?"). According to Read et al., this behavior of stress has to do with discourse considerations. Usually, stressing a noun indicates that this noun is new information, and the unstressed noun is 'given' information, which is a property of agents.

Heisterkamp-Wormer (1985) reports that stress in Dutch plays a significant role in agent identification, but is less important than agreement, animacy, and word order. According to de Bot and Montfort (1988), stress in MA plays a more important role than word order in agent identification, but remains less important than animacy and agreement.

### 3. The cue validity experiment

#### 3.1 Design

The cues discussed above were selected for the present experiment. For each cue there were three levels: at one level the cue favors N1, at the second level the cue favors N2, and at the third level the cue is neutral, i.e. it favors neither, or both nouns. The four cues, or factors, and their levels are listed below.

- a. Word order: NVN, NNV, and VNN.
- b. Animacy: Only first noun is animate (An1), both nouns are animate (An0), only second noun is animate (An2).
- c. Agreement: First noun only agrees with verb (Ag1), both nouns agree with verb (AG0), and second noun only agrees with verb (Ag2).
- d. Stress: First noun is stressed (Str1), neither noun is stressed (Str0), and second noun is stressed (Str2).

Adding to this the two-level factor 'group', the result is a fairly complex design with 162 cells (2 x 3 x 3 x 3 x 3).



### 3.2 Material, participants, and procedure

#### Test items

The nouns chosen were 18 masculine animate nouns (all animals) and 9 masculine inanimate nouns. The nine verbs selected were all transitive:

Table 2: Words used in the stimuli sentences for the cue validity experiment

Animate	Gloss	Inanimate	Gloss	Verbs	Gloss
1. <i>qeTT</i>	cat	<i>kursi</i>	chair	<i>dfee</i>	push
2. <i>Huli</i>	ram	<i>HiT</i>	wall	<i>šaf</i>	see
3. <i>sbee</i>	lion	<i>ktab</i>	book	<i>šra</i>	buy
4. <i>kelb</i>	dog	<i>mekteb</i>	desk	<i>Dreb</i>	hit
5. <i>ewd</i>	horse	<i>radyu</i>	radio	<i>eeDD</i>	bite
6. <i>qerd</i>	monkey	<i>stilu</i>	pen	<i>Hezz</i>	lift
7. <i>Hmar</i>	donkey	<i>SenDuq</i>	box	<i>xebbee</i>	hide
8. <i>nmer</i>	tiger	<i>garru</i>	cigarette	<i>herres</i>	break
9. <i>dubb</i>	bear	<i>bab</i>	door	<i>bae</i>	sell
10. <i>fil</i>	elephant				
11. <i>γrab</i>	crow				
12. <i>nser</i>	eagle				
13. <i>dib</i>	wolf				
14. <i>teeleb</i>	fox				
15. <i>Helluf</i>	pig				
16. <i>ežel</i>	calf				
17. <i>ferruž</i>	rooster				
18. <i>žmel</i>	camel				

The nouns were assigned to verbs in a random fashion, making sure that nouns and verbs are equally distributed in the experiment (see appendix 3 for the complete list of stimuli). For example, in a sentence with the first noun animate and the second noun inanimate, any of the animate nouns can be in the first position, and any noun of the inanimate ones can be in the second position.

Because of the design of the experiment, a number of sentences were not acceptable. In fact, most of the NNV sentences would sound odd to native speakers of MA, since this word order is not common in their language. Other odd sentences are those where an inanimate noun is placed at the beginning of NVN

sentences, an order which is usually interpreted as SVO in Arabic. The OVS interpretation is also possible, but the verb has to have an object-clitic at the end, as in:

- (13) *kursi šaf-u kelb*  
 chair saw-it(masc.) dog  
 "A dog saw a chair"

The issue of acceptability and sentence interpretation was taken up in a number of similar studies (e.g., Bates and MacWhinney 1989; McDonald 1987, de Bot and Montfort 1988). In these studies, it was argued that unacceptable (ungrammatical) sentences were processed in the same way as acceptable (grammatical) sentences. Bates and MacWhinney (1989: 43-45) state that comparable results have been obtained in languages with and without semi-grammatical stimuli. The results from experiments in Hungarian using semi-grammatical stimuli compared to those from experiments using only grammatical stimuli suggest that "The presence of semi-grammatical stimuli does not evoke strategies that are qualitatively different from those observed with normal sentences only" (p.45).

The 81 sentences used in the present experiment were randomized and then put in the form of blocks. The blocks were presented in different orders to the participants, so that each block occurred at the beginning, in the middle, and at the end. The purpose of the blocks design was to cancel any effect that might arise because of the order of sentences presented. For example, it is possible that if participants hear one set of sentences at the end of the test, they may apply a processing strategy which has to do with being tired, or with having learned a lot from the previous sentences; such effects might be confused with those of the cues themselves.

### **Trial sentences**

A set of 10 sentences with 10 corresponding pairs of pictures was recorded for the purpose of illustrating and explaining the task to the participants. None of these nouns or verbs was used in the test sentences.

### **Pictures**

There was a corresponding pair of pictures on a sheet of paper for each pair of nouns involved in each sentence. This yielded a total of 81 sheets with 81 pairs of pictures. A second set of pictures was identical to this one in all respects except the

order of pictures; a given pair of pictures with picture A on the left half of the sheet, and picture B on the right half of the sheet has a corresponding pair of pictures with the inverse order: picture A on the right half of the sheet and picture B on the left half. The purpose of the pictures was to help the participants focus on the agency role of a noun without having to spend time on or worry about remembering the two nouns. This would turn out to be very helpful especially when participants had to process an anomalous sentence. Putting the pictures in alternating order was meant to cancel the effect, if any should exist, of the order of pictures on sentence processing. For example, it is possible that a participant opts for the noun he or she sees on the left of the sheet. Such effect of directionality in picture presentation might be different for Arabic speakers, who are familiar with a right to left script.

### **Participants**

All 30 participants in the control group, and 20 from the experimental group (Participants 1 - 19, and 26) took part in the present experiment.

### **Procedure**

Each group of participants was divided into three subgroups: each of these subgroups was presented with the same sentences as the other subgroup, but in a different block order. Half of the second generation group and half of the control group were presented with one set of pictures (order A/B), and the other half from each group was presented with the other order (B/A).

Each participant took the test individually. Before the start of the test, the participants were told explicitly to identify the agent in each sentence they heard; the following instructions were given: "you will hear a list of sentences; in each sentence there are two nouns, one does something to the other; you are required to point out on this sheet which/who did the action." The participants were also told beforehand that some of the sentences might sound odd or unacceptable, and were asked to ignore that aspect of the sentence, and concentrate on the task of agent identification. Before the 81 test sentences were presented, the participants listened to the 10 trial sentences with the 10 pairs of corresponding pictures and proceeded in carrying out the task. After this, if participants had no questions and understood the task, the 81 test sentences were played, with about five seconds interval between one sentence and the next one. At the same time, the participant was presented with the pair of pictures corresponding to the nouns in the recorded

sentence (see Appendix 3). Each time the participant pointed out the agent in a sentence, the examiner marked the answer down on a separate sheet of paper which had the written version of the recorded sentences.

#### 4. Results

In the section devoted to the review of the literature, it was pointed out that the order of cues in MA and Dutch is different. For the sake of clarity, the following table, adapted from De Bot and Montfort (1988: 115, 117), shows the order in question:

Table 3: Order of cues in Dutch and MA

Dutch:	1. Agr.	2. Anim.	3. WO.	4. Str.
MA:	1. Anim.	2/3 Agr. Str.		4. WO.

With the above differences in mind, one would certainly be curious as to how second generation MA/Dutch bilinguals make use of these cues. Do they function like the control group? Do they function more like the Dutch monolinguals? Can they be characterized as being somewhere in between, and if so, where exactly? These questions will be focused upon in this section.

The results of the cue-validity experiment were submitted to a MANOVA analysis, with groups as between subjects factor, the four cues as within subjects factors, and choice of N1 or N2 as a dichotomous dependent variable. The analysis resulted in a number of significant sources of variation.

All four within subjects factors, i.e. the four cues, turned out to be significant, as can be seen in table 4 below.

Table 4: MANOVA results: Within subjects factors

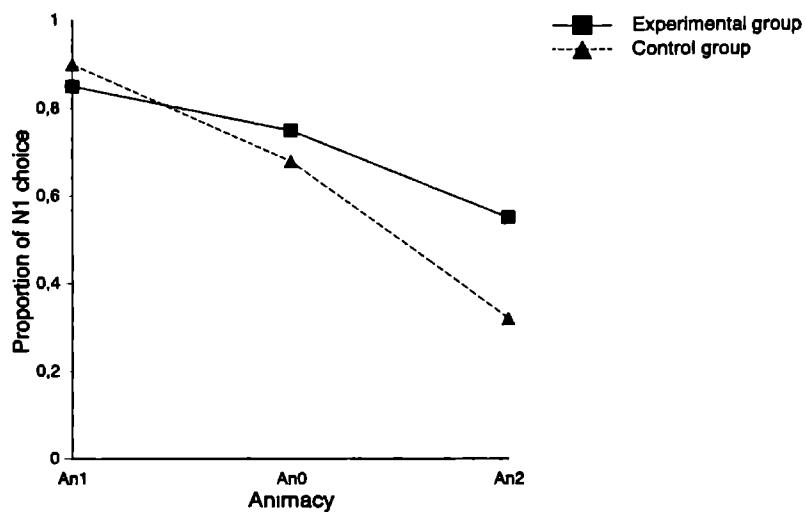
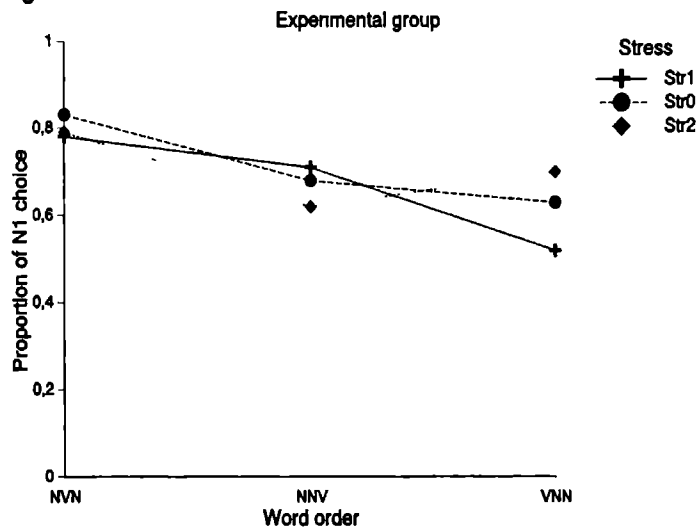
	F-ratio	Degrees of freedom (Numerator, Denominator)	p
Animacy	82.16	2, 96	.000
Agreement	76.52	2, 96	.000
Word Order	21.79	2, 96	.000
Stress	6.10	2, 96	.003

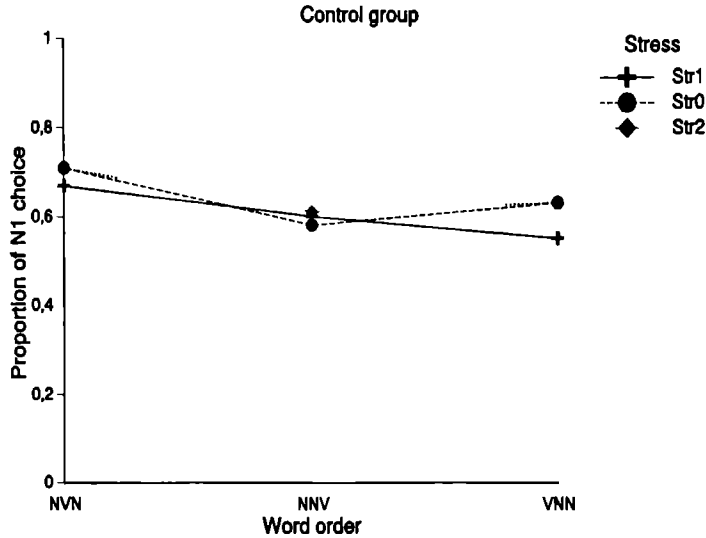
The results in table 4 indicate that the four cues used in the experiment do affect the choice of N1 or N2 as agent. The F-ratio of group as the between subjects factor revealed no significant interaction ( $F(1,48) = 2.48$ ;  $p = .122$ ). This means that the two groups did not differ in the overall experiment, i.e. with all the four cues taken together.

A number of interactions involving group turned out to be significant. It is important to look at these interactions in order to see at what level the groups differ, and how much they differ from each other. To begin with, the interaction of the factor group with animacy is the only two-way interaction which turned out to be significant ( $F(2,96) = 4.64$ ;  $p = .012$ ). This significance leaves no doubt that the two groups differed in the way they relied on animacy as a cue in sentence interpretation. The interaction of animacy by group is visualized in figure 1.

The other three interactions involving group with another cue turned out to be statistically not significant.

The interaction of group with word order and stress turned out to be significant ( $F(4,192) = 2.71$ ;  $p = .03$ ). Figure 2 is based on the means of N1 choice in each group for the interaction in question.

**Figure 1: Interaction of Group with Animacy****Figure 2a: Interaction of Word Order with Stress**

**Figure 2b: Interaction of Word Order with Stress**

Because word order is a property of a sentence, and not of a noun, it is better to take each level of word order separately, as a 'base' to analyze the levels of other factors. Before proceeding to this level-wise analysis, however, it is necessary to have an idea

about word order itself, and how the two groups reacted to it. Here are the proportions of N1 choice as agent in the three word order types.

**Table 5: Proportions of choice of N1 as agent in NVN, NNV, and VNN.**

	NVN	NNV	VNN
Experimental group	.80	.67	.62
Control group	.70	.59	.60

The proportions in table 5 indicate that the experimental group consistently chose N1 as agent in all three word order configurations. A contrast analysis between the two groups involving the differences between the levels of word order revealed no difference between the groups regarding the comparison of NVN with NNV. However, the contrast of NVN with VNN did reveal a significant difference between the two groups ( $F(1,48) = 3.11$ ;  $p < .001$ ). The experimental group chose

N1 in the VNN word order much less than it did in the NVN word order. The control group also lowered its choice of N1 in VNN, as compared to NVN, but not to a high degree. Hence the significance of the contrast in question.

After this brief account of the role of word order as a cue, we proceed now to look at the results of the level-wise analysis mentioned above. These are given in table 6.

Table 6: MANOVA results: Animacy, Agreement, and Stress at the different levels of Word Order.

Source	df1/df2 <sup>†</sup>	NVN	NNV	VNN
<b>Group</b>	1, 48	3.93	1.76	0.17
<b>Animacy</b>	2, 96	43.24**	59.42**	109.16**
<b>Agreement</b>	2, 96	46, 09**	33.96**	67,74**
<b>Stress</b>	2, 96	3.32*	1.06	16.38**
 Gr*An	2, 96	3.68*	3.82*	3.88*
Gr*Ag	2, 96	0.40	0.15	0.37
Gr*Str	2, 96	0,54	2.15	2.30
An*Ag	4, 192	6.65**	2.70*	3.41**
An*Str	4, 192	4.16**	1.32	0.92
Ag*Str	4, 192	0.79	3.64**	6.38**
 Gr*An*Ag	4, 192	0.63	2.24	2.55*
Gr*An*Str	4, 192	0.34	2.64*	0.69
Gr*Ag*Str	4, 192	0.50	1.26	0.89
An*Ag*Str	8, 384	3.27**	3.09**	3.86**
Gr*An*AGr* Str	8, 384	0.50	0.75	2.07*

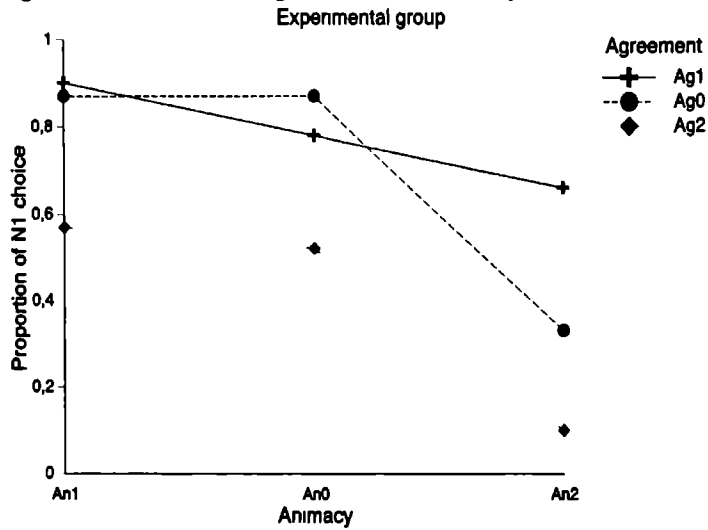
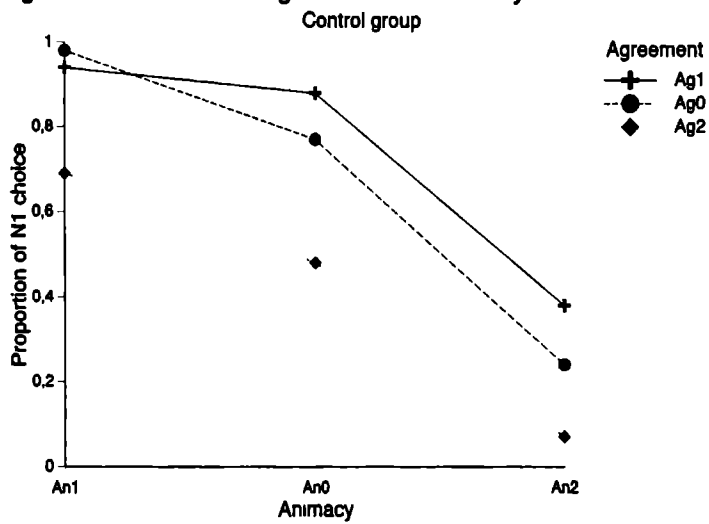
<sup>†</sup> degrees of freedom numerator/denominator

\* significant at the .01 level

\*\* significant at the .05 level

The three-way interaction of group with animacy and agreement turned out to be significant ( $F(4,192) = 3.6$ ;  $p < .007$ ). A level-wise analysis of this interaction in the three different word order configurations revealed one significant interaction at the level of VNN word order ( $F(4,192) = 2.55$ ;  $p < .05$ ) (see figure 3). The main difference between the experimental group and the control group can be observed in the cell where animacy favors N2 (An2) and agreement favors N1 (An1). The experimental group lowered its choice of N1 as agent in this configuration, but not as much as the control group did.



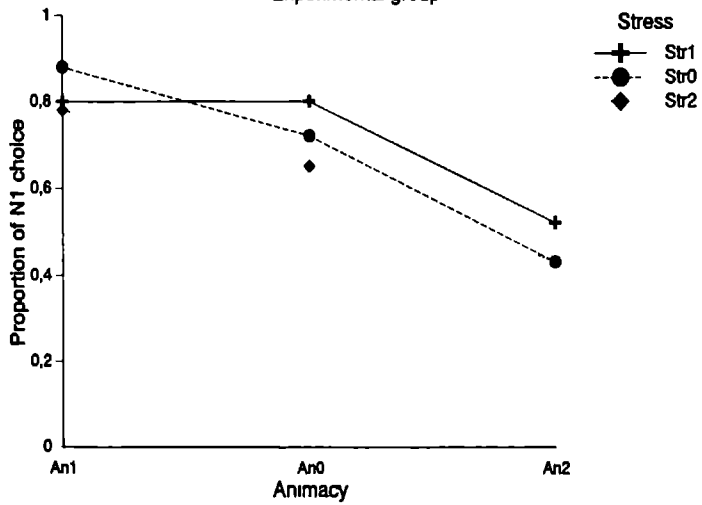
**Figure 3a: Interaction of Agreement with Animacy: V N N****Figure 3b: Interaction of Agreement with Animacy: V N N**

The interaction of group with animacy and stress turned out to be significant in word order NNV (see figure 4 below). The experimental group raised its choice of N1 as agent when stress favored N1 (Str1) and animacy was neutral (An0). In this cell, the experimental group chose N1 as agent more frequently than it did when both animacy and stress favored N1 (An1/Str1)! The control group, on the other hand, had the highest proportion of N1 choice as agent in this latter configuration (i.e. An1/Str1).

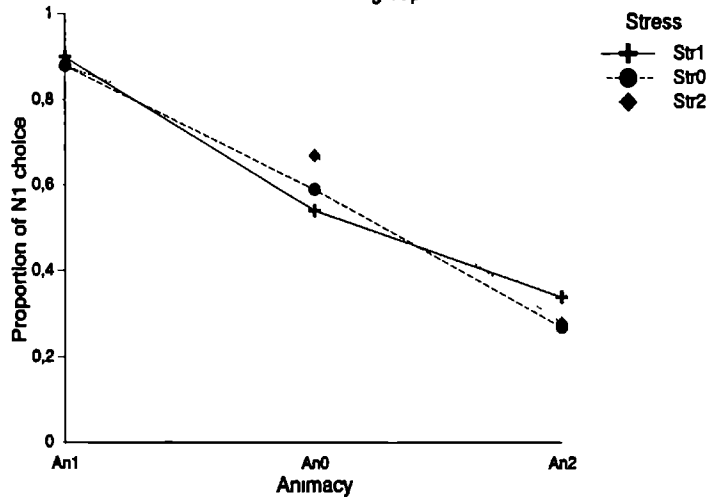
In both groups, it seems to be the case that stress plays an ambivalent role: sometimes it acts as a reinforcing factor in N1 choice, while at other times it behaves like a deterrent from N1 selection as agent. For example, a comparison of the configuration An0/Str1 with An0/Str2 shows that stress raises the proportion of N1 choice in the experimental group. A countereffect of stress in this same group can be spotted at the cells involving An1/Str0 and An1/Str1: in the former configuration the N1 proportion is higher than in the latter one, thus indicating that stress acts as a deterrent here. For the control group, this ambivalent role of stress can be seen at the cell where animacy is neutral (An0). The line corresponding to Str1 is lower than that corresponding to Str2, which is an indication that stress was perceived of as a deterrent here.

In fact, that a stressed noun should point at the unstressed noun is not all that uncommon. In her study on cue-validity in Dutch, Heisterkamp-Wormer (1985: 27) found out that when the second noun is stressed, N1 is chosen as agent 68% of the time, whereas when the first noun is stressed, the choice of N1 decreases to 62% of the time. The contrast of Str1 vs. Str2 was significant, but the overall effect of stress was found to play a very minor role in Dutch in Heisterkamp-Wormer's study.

**Figure 4a: Interaction of Animacy with Stress: N N V**  
Experimental group



**Figure 4b: Interaction of Animacy with stress: N N V**  
Control group



In order to make comparisons easier with findings by other researchers in cue-validity, we proceed to the calculation of percentages of explained variance by the different factors, a practice quite common in research in this area. These percentages are a useful tool in quantifying the similarities and differences in sentence processing between the experimental group and the control group, as well as in comparing sentence processing strategies in MA and Dutch. Such a comparison will make it easy to test the predictions that the competition model makes regarding bilingualism and sentence processing, namely that amount of exposure to and fluency in a second language determine the type of processing strategies that bilinguals rely on in their second language (MacWhinney et al. 1984, Bates and MacWhinney 1989, McDonald 1987, Liu et al. 1992). For the purposes of deriving these percentages of variance, separate ANOVA's were conducted on the experimental and the control groups.

The results of the ANOVA for the experimental group were as follows. Animacy accounted for 37.9%, agreement for 30% and word order for 10% of the explained experimental variance. For the control group, these figures were 68.5%, 17%, and 2.7 % respectively. These figures indicate that the control group made more use of animacy than the experimental group. The latter group made more use of the agreement cue and the word order cue in agent identification. It should be recalled that the interaction of animacy with group was significant, while that of agreement with group, and word order with group were not.

The percentages of explained variance in the experimental group and the control group indicate a similarity in the order of importance of the cues investigated: both groups relied most on animacy, then on subject-verb agreement, and only marginally (especially for the control group) on word order.

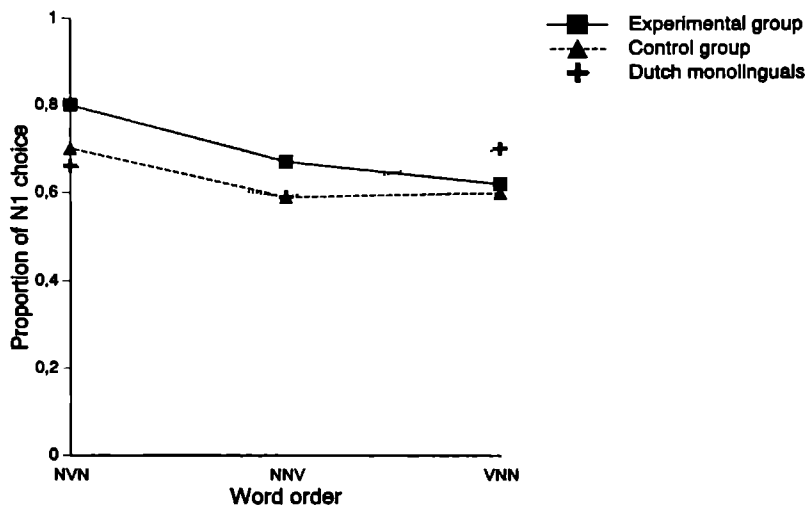
## 5. Discussion

In the presentation of the results of the analysis of variance above, it was said that the experimental group was found to rely more than the control group on agreement and word order, whereas the latter was found to rely more on animacy. In the section on bilingualism and language loss, and based on some findings (McDonald 1987, Kilborn and Cooreman 1987), it was said that learners adopt the strategies of a second language as a function of the amount of exposure and fluency in this language. Some participants immersed in a second language for a long time were found to shift from using the processing strategies of their mother tongue to using those of their second language when interpreting sentences in their mother tongue. The differences in sentence processing between our two groups can be

interpreted in at least two different ways: (a) The experimental group is gradually adopting the strategies of Dutch monolinguals (a case of backward language transfer), and (b) The experimental group in contexts of language attrition and language shift, speakers of the minority language (i.e. the language being abandoned) might 'cling' to particular cues of this language. These two interpretations are considered below.

Figure 5 provides the overall frequency of N1 choice in the different word orders tested (NVN, NNV, VNN). The Dutch data are taken from Heisterkamp-Wormer (1985).

**Figure 5: Word order in MA and Dutch**

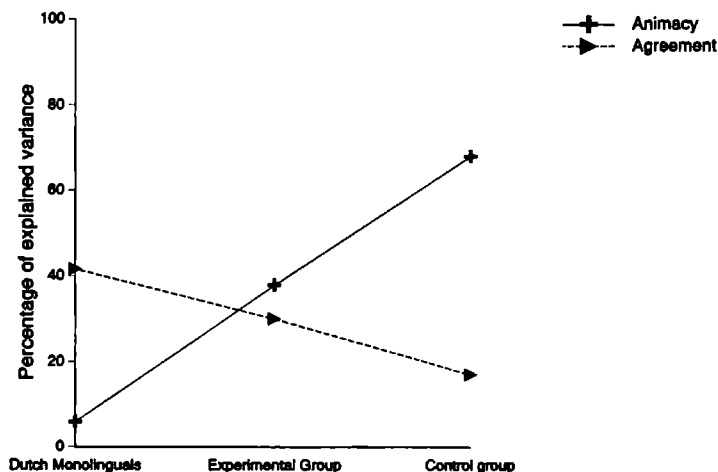


In the patterns NVN and NNV, the experimental group behaved differently from both Dutch monolinguals and the MA control group, resulting in a higher percentage of N1 choice than in either of these groups. In the pattern VNN, the experimental group chose N1 as agent less often than the Dutch group, and a little more often than the control group (.62 and .60 respectively).

The possibility of a cue transfer from Dutch to MA by the experimental group is undermined by the general tendency of this group to choose N1 as agent.<sup>3</sup> As such, it is more likely that the group in question is applying a general N1 choice strategy, rather than acting under the influence of Dutch.

Unlike the results for word order, those for animacy give more direct support to the hypothesis that second generation Moroccan adolescents are influenced by Dutch strategies in their interpretation of MA sentences. The agreement cue, on the other hand, is not so obviously different in the two groups. Figure 6 provides percentages of variance explained by animacy and agreement in Dutch and MA.

**Figure 6: Role of Agreement and Animacy in MA and Dutch**



<sup>3</sup>Data from other experiments (McDonald 1987, Kilborn and Cooreman 1987) are not very helpful in shedding some light on the issue at hand. McDonald reports percentages of variance for the NVN word order in an experiment where NVN was the only word order tested (together with case inflection and animacy). In the same article, she provides a percentage of variance explained by NNV in an experiment with NNV as the only word order used (experiment with relative clauses); the percentages of variance she found for NVN and NNV in these cases are not relevant for the present discussion. Kilborn and Cooreman (1987), on the other hand, did test all three word orders, but they do not report any percentages of variances for the three word orders (together or separately). Bates and MacWhinney (1989: 44) report that Dutch children of age 10 and under rely even more on the SVO cue than on case and animacy. The same cue was also found to be more reliable than animacy (but less than agreement) for Dutch adults. Because no figures were given by Bates and MacWhinney, it is difficult to draw a comparison between the Dutch 10-year-olds and our experimental group.

From figure 6, one can see that the experimental group does indeed occupy an intermediate position between the Moroccan control group and the Dutch group. It is very likely that this situation is the result of a transfer of processing strategies from Dutch into MA. It was said before that agreement plays a much more important role than animacy or word order in agent identification in Dutch. In MA, on the other hand, animacy was reported to play a more important role in agent identification than does number agreement or word order (sections 1.1 & 1.2).

A possible interpretation of the results obtained so far is that the participants in the experimental group were quite unsure about their proficiency in MA, and hence used cues they found easier and more reliable. They may never have been fully proficient in MA and therefore never have fully exploited the configuration of cues in their native language. The control group participants, being much more confident about their knowledge of MA, know better what to trust and what not to trust in terms of cues that lead to correct sentence interpretation.

One immediate objection to this interpretation is the unfounded nature of the assumption that word order and agreement cues might be easier to interpret than animacy. In fact, this runs counter to findings by Kail (1989), who argues that topological cues, i.e. those that require scanning across items like word order and agreement, are more difficult to interpret than the local ones, like animacy or stress. Moreover, in a number of languages where animacy is found to be less important than agreement and word order in data obtained from adults, animacy was found to play the most prominent role in data provided by children (e.g. English and Dutch (Bates and MacWhinney 1989)). One might claim that animacy is somehow easy to process since it is used by children before using other cues. Of course, this is not to say that children's grammars are easier than adults'; it is simply a common sense hypothesis in the absence of empirical data.

## 6. Conclusions

The results of the cue validity experiment discussed in this chapter show a number of characteristics of language processing strategies that are used by second generation Moroccan adolescents. The strategies they used differ to a certain degree from those used by the control group in Morocco. The main differences were detected at the level of animacy. Differences at other levels were also found, but these involve the combination of two or more factors. Significant interactions of group with other factors were found at the level involving animacy and agreement, word order and stress. An examination of the differences between the groups at the separate word order configurations (a level-wise analysis) revealed

the following significant interactions: group with animacy and agreement (at the level of VNN), group with animacy and stress (at the level of NNV).

With respect to word order, it was shown that the experimental group relied more on this cue than did the control group: the former showed a higher tendency to interpret the first noun as agent in general. This difference, however, was not statistically significant. A difference between the two groups was found regarding the order of importance of the different word orders in agent assignment: for the control group, this order was SVO, VSO/SOV. For the experimental group, the order of importance was found to be: SVO, SOV, and VSO.

The statistical analyses did not show a significant difference between the groups with respect to the agreement cue. There was an indication that agreement might play a more important role in the experimental group than in the control group. This indication was reported on the basis of the percentages of variance obtained from separate ANOVA's for the two groups. The explanation advanced to account for this difference was also related to Dutch: the second generation was influenced by the high reliance of agreement as a cue in Dutch.

The overall order of the cues investigated is not different for the two groups, but there is a difference in the hierarchy of word orders. On the whole, there are indications that with continuous exposure to Dutch and decrease in MA use, these differences will be large enough to alter the order of strategies of MA in the direction of Dutch strategies. This remains a very tentative prediction, which can be tested. The order of cues in MA for both groups is the following:

Table 7: Order of cues in MA (from most to least important)

Experimental group:	Animacy >	agreement >	word order > (SVO > SOV > VSO)	Stress
Control group:	Animacy >	agreement >	word order > (SVO > VSO-SOV)	Stress

In the review of the literature (section 1.3), it was mentioned that language loss has barely received any attention in studies of sentence processing. The results we obtained so far provide some support for the findings in Liu et al. (1992), and for the competition model and the predictions it makes about language use and cue-configurations in natural languages.

The claim that second generation adolescents resort to a transfer of strategies from Dutch into MA needs further cross-linguistic investigation to substantiate it.



More research on languages with cues similar to those used in MA and Dutch should be conducted. The results of such investigations would cast more light on the issue of transfer in language loss situations.



## **Chapter 5**

### **Phonological aspects of language loss**

#### **0. Introduction**

Some of the characteristics of the phonology of languages undergoing loss have been given in chapter 1 (section 3.1). In the present chapter, the phonological characteristics of the experimental group will be examined, and a comparison of the phonological systems of Dutch and MA will be made in order to attempt an explanation of the source of these characteristics. This will be done both at the perception level and the production level. The focus of this chapter will be on showing that while at the perception level second generation adolescents are as proficient as the control group in Morocco, at the production level they do show signs of phonological attrition.

The organization of this chapter is as follows. Section one introduces the phonological systems of MA and Dutch. Section two deals with the material and the experiment used for data elicitation. Data analysis and discussion of the results will be given in section three. Finally, the conclusion is given in section four.

#### **1. A sketch of the phonology of MA and Dutch**

he phonological inventory, syllable structure, and gemination in MA and Dutch will be dealt with here. These three aspects will be shown to be the locus of important differences between the second generation group and the control group in Morocco.

##### **1.1 The phonological inventory of MA**

Heath (1989: 17) lists 27 consonants in his phonological inventory of MA, while Harrell (1962: 3) lists 31 consonants. All of the consonants given in Heath (1989) are also given in Harrell (1962). The difference between the two proposed consonantal systems is that Harrell gives a phonemic status to pharyngealized (or emphatic) [M], [B], and [L], and the glottal stop [ʔ], while Heath (1989) does not (see table 2). The pharyngealized phonemes /M/ and /B/ have very limited occurrences. The phoneme /M/ occurs exclusively in the kinship term for mother

*MMi* "my mother", *MMek*<sup>1</sup> "your mother", *MMu* "his mother", etc. The phoneme /B/ is limited to occurrences of the word *BBa* "(my) father", as in *BBak* "your father", *BBah* "his father", etc. The pharyngealized /L/ is a *rare* phoneme which occurs as a geminate in the form /LLah/ "Allah" and the form *theLLa* "take care of" (Heath 1989: 18). An example, perhaps the only one, of a near minimal pair where this phoneme is opposed to its non-pharyngealized counter-part is the following: *wella* and *weLLah*, respectively "he went back" and "by God."

Neither Harrell nor Heath give geminate (or double) consonants as phonemes of MA. However, geminates do distinguish minimal pairs in MA. For example, the /l/ is different in the words *Hal* "state; weather" and *Hall* "open", and the first /m/ sound is different in the pair *Hmam* "pigeons" and *Hemmam* "(Turkish) bath".

MA has three full vowels: /i/, /u/, and /a/. Before or after a pharyngealized segment or one of the back segments /q/, /x/, /ɣ/, and /ɛ/, they are realized as [e], [o], and [a], i.e. with a lowering effect. They are realized as [i], [u] and [æ] elsewhere (Heath 1989: 19). In addition to these three vowels, Heath adds three short vowels, which he labels as 'unstable' and as having 'fairly ambiguous structural status'. One is the schwa vowel, transcribed in our MA data as /e/. The other two are a rounded vowel with a consonantal feature /w/ (which occurs as [u] in the form *xubz* "bread"), and a very short vowel occurring between segments that would otherwise be assimilated into a geminate, like /t/ and /d/ in the word *t-drib* "training" which is phonetically realized as [t<sup>h</sup>drib] (Heath 1989: 19).

## 1.2 The phonological inventory of Dutch

The consonantal inventory of Dutch given by Booij (1995: 7) is made up of 20 consonants. For convenience of exposition, these will be presented together with those of MA in the next section. We will concentrate here on the vowel system of Dutch. Booij (1995: 4) gives the following phonological inventory of Standard Dutch vowels:

---

<sup>1</sup>We disregard the controversy about whether the schwa vowel is phonemic or derived by rule. For purposes of the present discussion, we assume that there is a schwa at the phonetic level.

Table 1: The vowels of Standard Dutch

Short vowels:	i, e, o, y, a
Long vowels:	i, y, u, e, ø, o, a
Schwa:	ə
Diphthongs:	ei, œy, ou.

A number of 'marginal' vowels occurring in loan-words are not mentioned in table 1. These are long vowels which occur in stressed syllables and nasal vowels borrowed from French. (Booij 1995: 5) notes that the schwa can occur in syllable-final position, unlike the other short vowels. This is the mirror image of the behavior of the vowels in MA where all vowels except the schwa vowel can occur in word-final position.

### 1.3 A comparison between MA and Dutch phonological inventories

The phonological inventories of Dutch and MA are very different from each other. MA has a complex consonantal system (27 consonants) and a fairly simple vowel system (3 vowels), whereas Dutch presents a reverse image, with 20 consonants and about 24 vowels (vowels in borrowed words included and diphthongs excluded). Since the phonological tests in the present chapter deal with the consonantal system, it is worthwhile to have a closer look at the differences between MA and Dutch with respect to consonants. For ease of reference, the consonantal inventories of MA and Dutch are given in table 2.

As can be seen in table 2, the following classes of consonants in MA are not found in Dutch: pharyngealized segments (or emphatics), palatals (or palato-alveolars) /ʃ/ and /ʒ/, pharyngeal fricatives /ħ/ and /ʕ/, and the uvular stop /q/. The glottal /h/ in Dutch plays a very minor role. Van Bakel (1973: 25) labels this segment as a 'special segment' due to its limited distribution in Dutch: it occurs only syllable-initially. In MA, on the contrary, /h/ is found in a variety of contexts: initially (e.g. *hada* "this (one)"), medially (*mhed* "cradle"), and word-finally (*klah* "he ate it (masc.)"). In addition, /h/ in MA sounds more voiced than in Dutch.

The uvulars /x/ and /ɣ/ in MA are articulated more to the back of the vocal tract than are their equivalents in Dutch, hence the difference in the classification of the two phonemes. For the present analysis, these differences are of no consequence.

Table 2: The consonantal system of MA (after Harrell 1962, and Heath 1989) and Dutch (after Booij 1995).

	MA	Dutch
<b><i>Bilabial:</i></b>		
voiced stop:	b	b
Voiceless stop:	- <sup>*</sup>	p
nasal:	m	m
semivowels:	w, y	w, y
<b><i>Labiodental:</i></b>		
voiceless fricative:	f	f
<b><i>Apical (Alveolar):</i></b>		
voiceless stops:	t, T	-
voiced stops:	d, D	t, -
voiceless fricatives:	s, S	d, -
voiced fricatives:	z, Z	s, -
nasals:	n, -	z, -
laterals:	l, r, R	n, ng
<b><i>Palatal (Palato-alveolar):</i></b>		
voiceless fricative:	š	l, r, -
voiced fricative:	ž	-
<b><i>Velar:</i></b>		
voiceless stop:	k	-
voiced stop:	g	k
Voiceless fricative:	-	(g) <sup>2</sup>
Voiced fricative:	-	x
		γ
<b><i>Uvular:</i></b>		
voiceless stop:	q	-
voiceless fricative:	x	-
voiced fricative:	γ	-
<b><i>Pharyngeal:</i></b>		
voiceless fricative:	H	-
voiced fricative:	ε	-
<b><i>Glottal:</i></b>		
voiceless fricative:	h	h

<sup>\*</sup> indicates absence of a corresponding phoneme.

---

<sup>2</sup>This phoneme is between parentheses because it occurs only in non-native words like *goal* "goal" (Booij 1995: 7).

## 1.4 The syllable structure

Another area of differences between Dutch and MA is syllable structure, as will become clear in the analysis of production data (section 3.2). The following survey is meant to provide a background for understanding these differences.

### 1.4.1 The syllable structure of MA

The syllable in MA is maximally made of two consonants in the onset, a vowel in the nucleus, and two consonants in the coda. The first element in the onset can be a geminate, in which case it is possible to say that the onset consists of three positions. There is a large list of nouns and verbs that illustrate syllables with onsets where the first element is a geminate segment and the second element is a single segment.

All nouns that begin with a geminate segment are the result of assimilation of the definite article 'l' with the first segment of the noun. Some examples of these words are: *ssbeε* "lion", *tthen* "hay", *ddwa* "medecine", *ššežra* "tree", etc. In these four words, the first long segments are the result of the assimilation of /l/ with the initial sound of the word (/l+*sbeε*/, /l+*tthen*/, /l+*dwa*/, and /l+*ššežra*/)<sup>3</sup>.

In addition to definiteness, there are two very productive morphological processes in MA which are responsible for generating onsets with geminates. One of these is passivization, as in the following examples:

- (1) *tt-kal*                      *l-xubz*  
was-eaten                  the-bread  
"Bread was eaten"
- (2) *tt-bae-u*                      *kullhum*  
were-sold-they              all of them  
"All of them were sold"

The second process that results in onsets with geminates is reciprocity, as shown by the following two sentences:

- (3) *tt-katb-u*  
Reciprocal-write-they  
"They wrote to each other"

---

<sup>3</sup>The segments that assimilate 'l' are the following: n, l, r, t, d, T, D, s, z, S, Z, š, and ž.

- (4) *tt-xaSem-u*  
 Reciprocal-quarrel-they  
 "They quarrelled with each other"

Leaving aside the issue of whether an onset of three segments is underlying or derived, we can say that native speakers of MA do produce syllables with onsets that have a geminate sound followed by another sound. Benkaddour (1990) allows for one segment in the onset. In his analysis an additional segment would belong to an appendix.

In an analysis of the phonetic syllable structure of MA conducted by Bull (1991), the nucleus of the syllable can be filled with consonants as well as vowels. Benhallam (1990) and Benkaddour (1982, 1990) on the other hand, adopt a syllable representation where only full vowels and the schwa can be syllabic, i.e. fill the nucleus position. What is noteworthy is that in both analyses a transitional vowel-like entity is reported to be attested between consonants that would be otherwise unpronounceable, as in *tteffaH* "apples", *mšettet* "dispersed", etc. In the present work, we will assume that schwa vowels can occupy the nucleus position in a syllable, at least at the phonetic level.

The coda position can be empty, filled with one element, or two elements. If it is filled with two elements, the second one would belong to an appendix.

Here are some forms to illustrate the syllable template of MA:

- (5)
- |           |              |                      |
|-----------|--------------|----------------------|
| CV:       | <i>ši</i>    | "some (-thing/-one)" |
| CCV:      | <i>hna</i>   | "here"               |
| CVC:      | <i>kul</i>   | "eat"                |
| CVCC:     | <i>weld</i>  | "boy"                |
| CCVC:     | <i>bnat</i>  | "girls"              |
| CCVCC:    | <i>ktebt</i> | "I wrote"            |
| C1C1C2VC: | <i>ssbeε</i> | "the lion"           |

#### 1.4.2 The syllable structure of Dutch

The syllable structure of Dutch is fairly different from that of MA. It contains more syllable terminal positions, i.e., it allows more segments in the same syllable than does MA. In Dutch, the onset of a syllable can host up to three segments, in which case the first segment has to be an /s/, the rime constituent can host up to



three segments: two in the nucleus, and one in the coda<sup>4</sup>, or one in the nucleus and two in the coda; at least two positions in the rime have to be filled: both positions in the nucleus (i.e. a long vowel) or one position in the nucleus and another one in the coda (i.e. a VC sequence). This condition accounts for the fact that Dutch syllables cannot end in short vowels, with the exception of the schwa, which behaves phonotactically like a long vowel.

The following are examples illustrating some possible syllables in Dutch (syllables with codas of more than two segments are not included):

(6)	CV:	<i>de</i>	"the"
	VC:	<i>in</i>	"in"
	CVC:	<i>moet</i>	"must"
	CVCC:	<i>melk</i>	"milk"
	CCV:	<i>bar<u>st</u>te</i>	"burst"
	CVV:	<i>zee</i>	"see"
	CCVC:	<i>vlot</i>	"raft"
	CVVC:	<i>been</i>	"leg"
	CCVV:	<i>snee</i>	"incision"
	CCVCC:	<i>flink</i>	"robust"
	CCCVC:	<i>spreek</i>	"speak"
	CCCVC:	<i>sproei</i>	"spray"
	CCCVC:	<i>sprint</i>	"sprint"

Not all segments belong to syllables: there are appendix positions, which are usually reserved for coronal segments (Booij 1995: 26). An example of a two-consonant appendix is found in *koorts* "fever" which is made up of the syllable /*koor*/ (CVC) and the appendix /-ts/.<sup>5</sup>

### 1.5 Gemination

In MA, gemination can be lexical or derived. Examples of lexical gemination are in verbs like *beddel* "change" *kemmel* "finish", *qelleb* "look for", and *meHHen*

---

<sup>4</sup>Booij (1995: 26) notes that there are exceptionally long rimes, which are found in some place names (e.g. *Weesp*), past tense of a few verbs (e.g. *hield* "held up", *hielp* "helped", *wierp* "threw", *bedierf* "spoiled", *verwierf* "acquired", and *stierf* "died").

<sup>5</sup> Booij (p.26) explains that the rationale behind postulating appendices is to capture the distribution of syllable constituents: without an appendix, there would be a set of coronal segments which occur exclusively in the coda of the last syllable in a (phonological) word; this would not be explained without granting a special status to these segments. Appendices can be made up of one segment (e.g. *laars* /lar-z/ "boot"), of two segments (e.g. *herfst* /herf-st/ "autumn"), or of three segments (e.g. *vermoeidst* /vermuj-dst/ "most tired").

"cause someone to be in pain/to suffer". Derived gemination can be illustrated by nouns of action like *xeTTaf* "thief; snatcher" derived from the verb *xTef*, *keddab* "liar" derived from the verb *kdeb* "to lie". Other derived geminates are the result of the assimilation of the definite article /l-/ to the initial segment of the noun it defines (see 1.4.1 above). Derived geminates can result from word boundaries, as instantiated by the two words *kayšuf* "he is looking" and *fiḥ* "in/at him": the concatenation of these two words results in the following phonetic realization: [kayšuffiḥ] "he is looking at him". A further example of derived gemination is causative formation. The causative is usually formed by the doubling of a root consonant, as in the following example:

- (7)      *zreb*                      *zerreb*  
           "be in a hurry"        "make someone hurry up"

Gemination is an interesting phenomenon that bears both on syllable structure and on the phonological inventory of MA. As said before, the onset of a syllable in MA has two positions, the first position of which can be filled by a simple segment (C1C2V-) or by a geminate segment (C1C1C2V-). In this sense, the geminate is tautosyllabic, i.e. it belongs to the same syllable. Geminates can also be heterosyllabic, as in cases of inter-vocalic geminates. For example, the geminate /zz/ in *hezzu* "they carried" serves to close the syllable *hez*, and thus make it an acceptable syllable since schwas cannot occur in open syllables like (\*he), and to give an onset to the syllable (/zu/).

In Dutch, geminates are not allowed within the same prosodic word<sup>6</sup>. If some morphological operation results in the concatenation of two identical segments, i.e. gemination, a phonological rule of degemination applies, as in *grootte* "size" which is pronounced with one [t], or *voedde* "fed" which is pronounced with one [d] (Booij 1995: 28). In some words, geminates are attested, like the double [rr] in *verrassen* "to surprise", by opposition to *verassen* "to cremate" which is pronounced with one [r] (Booij 1995: 69)

## 2. Perception of phonological oppositions

The present section deals with an experiment on the perception of six phonological oppositions in MA. The goal of the experiment was to assess the extent of loss of

---

<sup>6</sup>A prosodic word can, but does not always, correspond to a grammatical word. Thus the compound word *handappel* "eating apple" is made up of two phonological words: /hand/ and /appel/ (Booij 1995: 29).

phonological distinctions among the experimental group, by comparing the perception of this group with that of the control group in Morocco.

## 2.1 Participants, material, design and procedure

Three groups took part in the present experiment: the experimental group (N = 20), the control group (N = 30), and a Dutch control group (N = 12). The Dutch group, made up of students at the University of Nijmegen, was included in order to provide evidence that the oppositions tested are language dependent, i.e. part of the phonological system of MA. The oppositions tested are found in Moroccan Arabic but not in Dutch. The oppositions /D/ vs. /d/ and /S/ vs. /s/ are meant to test pharyngealization. The other oppositions are meant to test articulatory features involving the back part of the vocal tract, which are not found in Dutch (See appendix 4A for the list of stimuli:

- (8) (i) Glottal voiceless fricative /h/ with uvular voiceless fricative /x/.
- (ii) Pharyngeal voiceless fricative /H/ with glottal voiceless fricative /h/.
- (iii) Pharyngealized alveolar voiced stop /D/ with alveolar voiced stop /d/.
- (iv) Pharyngealized alveolar voiceless fricative /S/ with alveolar voiceless fricative /s/.
- (v) Pharyngeal voiced fricative /ε/ with uvular voiced fricative /γ/.
- (vi) Uvular voiceless stop /q/ with velar voiceless stop /k/.

The segments involved in the oppositions (i), (ii), (v) and (vi) are articulated at the far back of the vocal tract. Most of the segments involved in these oppositions are not part of the Dutch phonological inventory, namely /H/, /q/, /ε/, /S/, and /D/. In addition, although /h/ is part of the Dutch phonological inventory, it has a very limited distribution in this language, unlike its status in MA (see 1.3 above).

Each of the oppositions above was instantiated by four pairs of monosyllabic nonce words. Each pair had the target segment in a different context:

- (9) (i) Prevocalic postconsonantal (C-VC).
- (ii) Preconsonantal (-CVC).
- (iii) Prevocalic (-VC).
- (iv) Postvocalic (CV-).

This yielded a 4 (context) x 6 (opposition) design. In addition to these 24 pairs of different elements, 24 identical pairs were included in the experiment. The list of stimuli was randomized.

This list was played on tape to the participants. These were provided with answer sheets, and were instructed to put a cross under 'different' or 'same' whenever they heard a pair of words on tape (See Appendix 4). A pause of about 4

seconds followed each pair to give participants time to mark their answers down. Before proceeding to the test items, participants heard illustrative pairs of oppositions, to make sure they understood the task. These illustrative pairs were not part of the experiment.

## 2.2 Results

The answers of the participants were submitted to a MANOVA analysis. All main effects (group, opposition, and context) turned out to be significant at better than the 0.01 level. The interaction of group with opposition was also significant at better than the 0.01 level, while the interaction involving group and context was not significant ( $p < .254$ ). A three-way interaction of group by context by opposition turned out to be significant at better than the 0.01 level. Table 3 sums up these results.

Table 3: MANOVA results of the phonology perception test.

	SS	DF	MS	F
Group	4.29	2	2.15	7.07**
Context	13.95	3	4.53	58.07**
Opposition	13.04	5	2.61	35.92**
Group by context	0.61	6	0.1	1.31
Group by opposition	1.99	10	0.2	2.74**
Group by context by opposition	14.12	30	0.47	5.66**

\*\* Significant at the .01 level

The interaction of group and opposition supports the idea that the oppositions are treated differently in the three groups, hence its significance. However, it is not clear how each of the groups dealt with the oppositions in question. As such it is difficult to make comparisons between the second generation group and the Moroccan control group. To do so, a contrast analysis was carried out on the three groups.

The results of this analysis show no significant difference between the Moroccan control group and the experimental group in any of the six oppositions. The Dutch group, however, did differ significantly from the experimental group, especially regarding the oppositions /h/ vs. /H/ and /q/ vs. /k/. The results of the contrast analysis are given in table 5:

Table 4: Contrast analysis involving groups and oppositions.

	SS	DF	MS	F	(Oppositions)
Experimental	.01	1	.01	.10	(H/x)
group vs.	11.18	1	11.18	79.67**	(h/H)
Dutch group:	.13	1	.13	1.11	(D/d)
	.49	1	.49	1.96	(S/s)
	.01	1	.01	1.34	(ε/γ)
	1.38	1	1.38	10.94**	(k/q)
Experimental	.24	1	.24	1.81	(H/x)
group vs.	.07	1	.07	.48	(h/H)
control group:	.12	1	.12	1.02	(D/d)
	.05	1	.05	.22	(S/s)
	.00	1	.00	.42	(ε/γ)
	.01	1	.01	.06	(k/q)

In general, the means for the control group in Morocco are not very different from those of the experimental group. The mean correct scores for each group in the two oppositions /h/ vs. /H/ and /q/ vs. /k/ are given in figures 1 and 2 respectively.

It can easily be noted that the context where it was most difficult for the Dutch group to distinguish /h/ from /H/ is context 1, i.e. postconsonantal prevocalic, (mean = 0.25, SD = 0.452), followed by context 3, i.e. prevocalic word-initial, (mean = 0.333; SD = 0.492). Context 2, i.e. preconsonantal word initial, ranked third in difficulty (mean = 0.417, SD = 0.515), and finally, context 4, i.e. postvocalic word final, turned out to be the easiest, with the highest score (mean = 0.667, SD = 0.492). The other two groups scored very high in all four contexts, with a very minor difference between them in contexts 2 and 4.

The mean scores for the second opposition where the experimental group and the Dutch control group differed from each other, i.e. the opposition /q/ vs. /k/, are reflected in figure 2. The mean score for contexts 1 and 2 differed considerably from those of the other two contexts for the Dutch group. Context 2 was the most difficult for all three groups. There is no apparent reason why this context should be the most difficult in this opposition, except that it is word-initially and followed by a consonant, which might make the difference in the opposition /k/ vs. /q/ difficult to perceive.

Figure 1: Opposition H/h

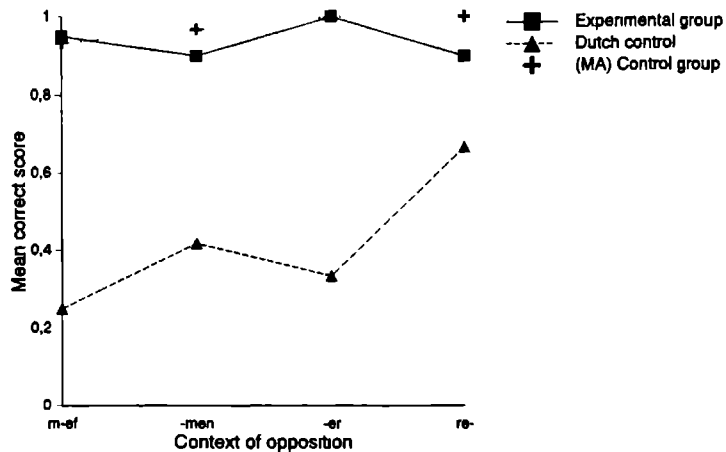
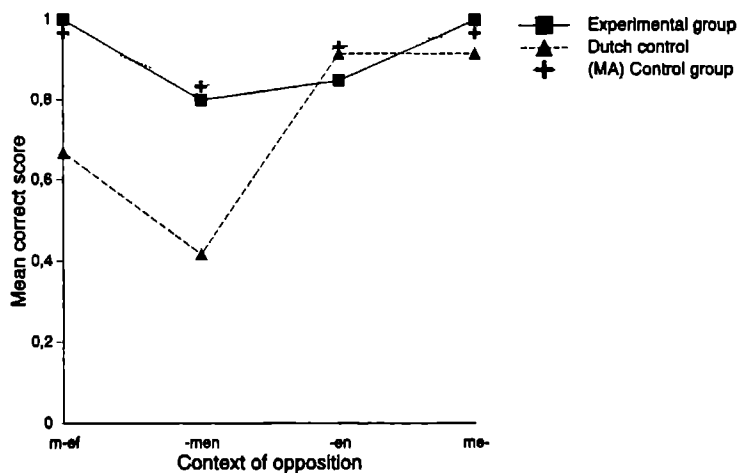


Figure 2: Opposition k/q



However, the opposition in question was easy for all three groups in another word-initial context, namely context 3. This might be due to the difference between the

two contexts: context 1 has an immediately following consonant, and context 2 has an immediately following vowel.

Since contexts can play different roles in the identification of oppositions, it would be interesting to know if the experimental group and the Moroccan control group differed from each other regarding context sensitivity. Since oppositions 2 and 6 were the ones where a group difference was detected, it is enough to apply the contrast analysis to the 4 contexts within these two oppositions. Such a comparison becomes more meaningful when we recall the results of the cue validity test in chapter 4, where it was argued that the Dutch language exercises an influence on processing strategies of second generation adolescents. If this is also the case in the perception of phonological oppositions, we should expect signs of differences between the Moroccan control group and the experimental group, and similarities between the latter group and the Dutch control group. In particular, it is interesting to see if the differences that look minor (and qualified as such above) in figures 1 and 2 are really that insignificant. For this purpose, a contrast analysis on contexts within oppositions 2 and 6 was carried out.

The results of the contrast analysis revealed that there was no significant difference between the second generation group and the Moroccan control group in any context. The former group did differ significantly from the Dutch control in all four contexts of opposition 2: context 1 ( $F(1,59) = 53.48$ ;  $p < .000$ ), context 2 ( $F(1,59) = 26.6$ ;  $p < .000$ ), context 3 ( $F(1,59) = 94.4$ ;  $p < .000$ ); context 4 ( $F(1,59) = 10.18$ ;  $p < .002$ ). Regarding opposition 6, there was a significant difference between the experimental and the Dutch control groups in context 1 ( $F(1,59) = 15.63$ ;  $p < .000$ ), and context 2 ( $F(1,59) = 8.81$ ;  $p < .004$ ) but not in contexts 3 and 4.

These results indicate that the second generation group and the Moroccan control group do not differ from each other significantly in perceiving the phonological oppositions tested here. This turned out also to be the case with the oppositions that the Dutch control group found difficult to identify. There is very little indication, if any, that the second generation group finds the two oppositions (2 and 6) more difficult than the Moroccan control group did. This can be detected by looking at the mean scores of each group in these two oppositions. The second generation group had a mean score of 0.94 ( $SD = 0.047$ ) in opposition 2 and a mean score of 0.91 ( $SD = 0.103$ ) in opposition 6; the respective mean scores for the Moroccan control group were 0.97 ( $SD = 0.032$ ) for opposition 2 and 0.92 ( $SD = 0.063$ ) for opposition 6.

### 3. Production

Thirty participants from the control group and twenty from the experimental group were asked to tell a story based on Mayer's (1969) picture book. The story was tape recorded. Before the recording took place, the participants were invited to page through the book in order to have an idea of what it is about.

In addition to the narrative, the participants from the experimental group were given a list of 25 Dutch words and were asked to give their equivalents in MA. This list was meant to elicit the production of the following marked segments: [q] [ɛ], [H], [D], and [S]. Each sound was expected to be realized in five instances (see appendix 4C for the list). The words given by the participants were recorded on tape.

It would have been possible to devise a similar list for the control group in Morocco in French, but it was felt that there was no need for that. The answers of the experimental group are taken into consideration only if they give the expected form, regardless of regional variation. For example, for the word 'family', the participants are expected to give *ea?ila* (target segment is [ɛ]). If a participant gives the form *famila*, which is another way of saying "family" in MA, then this form is not counted as a case of failure of realization of [ɛ]. The percentage of the [ɛ] substitution would then be derived from the remaining 4 forms.

Because of time constraints, it was not possible to analyze all 50 narratives in detail. From the experimental group, 10 narratives told by participants who had the lowest proficiency score in MA were selected for a close analysis. This selection was motivated by the assumption that it is low proficiency speakers who would show the more characteristics of language loss. Similarly, 10 narratives were selected from the control group, representing three geographical areas: Tangier, Casablanca, and Oujda.

The analysis of the narratives of the experimental group revealed the existence of phenomena relating to sound substitution, reduction of geminates, simplification of syllable structure, hesitations, frequent insertions of pauses and discourse fillers (like 'eh' 'ah', etc). These phenomena are discussed in the present section.

#### 3.1 Sound substitution

The segments that were subject to substitution are /q/, /R/, /r/, /š/, and /ž/. We begin by a close look at the substitution of /q/ by [k]. Table 5 presents the substitutions attested in the narratives and/or given in the translation of the list of Dutch words. The attested forms are those actually produced by the participant.



The forms in parentheses are taken from the translated lists. The target forms are those that would have been attested if there had been no substitution. Table 5 also contains the forms that were produced by the participants where no substitution occurred.

Table 5: Replacement of /q/ by [k]

Participant	Target form	Attested form	Gloss	No substitution	Gloss	%*
02	<i>faq</i>	fak	he woke up	<i>buqala</i>	bucket	60 (80)
	<i>kayqelleb</i>	kaykelleb	he searches	<i>tuqba</i>	hole	
	<i>iqelleb</i>	ikelleb	he searches	<i>(qtil [tqil])</i>	heavy	
	<i>qehwa</i>	(kehwa)**	coffee			
	<i>ssuq</i>	(ssuk)	market			
	<i>qra</i>	(kra)	read			
	<i>lqerd</i>	(lqerd)	ape			
03	<i>lqaf</i>	lka	letter 'q'	<i>fuyax</i> (x11)	when	15 (33)
	<i>qbeT</i>	kbet	catch	<i>ne?as</i> (x3)	It jumps	
	<i>kateqbet</i>	katekbet	she catches	<i>we?fet</i>	she stopped	
	<i>qra</i>	(keə)	read	<i>el fu?</i>	above	
				<i>kat?ul</i>	she says	
				<i>(?awa/ahwa)</i>	coffee	
06	<i>qehwa</i>	(kehwa)	coffee	<i>(su?)</i>	market	00 (06)
				<i>faqu</i>	they woke up	
				<i>lqawha</i>	they found it	
				<i>bqa</i>	stayed	
				<i>neqqez</i>	jump	
				<i>qellbu</i>	they searched	
				<i>bqaw</i> (x2)	they remained	
				<i>baqi</i>	still	
				<i>kayneqqez</i>	he is jumping	
				(x3)		
				<i>waqef</i> (x2)	standing	
				<i>baqi</i>	still	
				<i>lqa</i>	he found	
				<i>lqaw</i>	they found	
26	<i>faq</i>	fak	he woke up			100 <sup>7</sup>
	<i>lqerqra</i>	lkerkra	the frog			
	<i>lqerqra</i>	lkerkra	the frog			
	<i>qerqra</i>	kerkra	a frog			

\* % substitution is derived from total number of forms where the segment is expected to occur.

\*\* Words from the list and percentages referring to the list are enclosed between parentheses)

<sup>7</sup>Participant 26 gave only 9 forms from the list and had to stop the test. This is why there is no percentage of substitution of forms from the list.

The substitute [k] is in general pronounced half-way between the uvular [q] and the velar [k]. It is difficult to draw comparisons between participants because of the differences in the number of forms each one produced. Moreover, some participants produced one word more often than other words (e.g. for participant 26, 3 substitutions are attested in the same form, i.e. *kerkra*). Participant 26, for example substituted all her /q/ segments for [k]. Participant 3 pronounced one [q] in six words. There were other words in the case of this participant, as is shown in table 5 above, i.e. those that are realized with [x] or [ʔ] instead of a [q]. These were not included as substitutions because they can all be instances of regional variation: the spirantization of [q] was noted in chapter 2 as characterizing Jebli speech (Note that the participant is from Tetouan which is in the Jbala area), the realization of a glottal stop instead of a [q] is also a case of regional variation, which was noted in chapter 2 (section 1.1) as a trait of the MA variety of Fes.

Since the opposition /q/ vs. /k/ was included in the perception experiment, it would be interesting to know if the participants who resorted to substitutions of [q] in the production task had any difficulties identifying the opposition /q/ vs. /k/ in the perception experiment. To begin with, participant 2 correctly identified the opposition in 3 cases out of 4, participant 3 in 2 cases out of 4, participants 6 and 26 correctly identified the opposition in all four cases. One can say that in general, the opposition did not seem to be particularly difficult to the participants who resorted to substitution. Participant 3 probably has some difficulty with the opposition in question since he does not use it as often. In this sense, one cannot say that the participant in question is influenced by the Dutch phonological system, at least not in the case of the /q/ vs. /k/ opposition. The other participants simply did not show any remarkable difficulty in the task of identifying the opposition in question.

One explanation for the substitution of /q/ by [k] is the 'unnaturalness' or the markedness of the segment /q/. Another explanation has to do with the Dutch phonological system which has no /q/ in its inventory of consonants. One would agree with the commonly cited hypothesis (e.g. Andersen 1982) that in a bilingual context, if an opposition exists in the dominated language of a bilingual speaker but is absent from his dominant language, it will have fewer chances of surviving in the weaker language of this bilingual. This is especially the case if one or both segments in this opposition are marked. It is difficult, however, to advance such an explanation since other segments which are also marked, e.g., /H/ and /ε/, did not undergo any substitution.

The phonetic realization of /q/ as [k] was used as an example of how difficult it is to separate internal from external sources of language change by Campbell and Muntzel (1989: 188). In their discussion of the merging of /q/ with /k/ in Tuxtla Chico Mam, they simply take both explanations as working hypotheses, and note the necessity of more work in this area. At the present stage of our investigation, it seems that it is safer not to discard either of the explanations. What is more important here is the fact that such a substitution occurs in MA as spoken in the Netherlands, and not in MA in Morocco.

With very few exceptions, the other sounds that were used in the perception experiment were not substituted. One of the exceptions is the pharyngealized /D/ which was realized as [d] by participant 3: the form *kaDDun* "she thinks/believes" was realized by this participant as [katdun], with no assimilation and a non-pharyngealized [d]. Another exception is the deletion of /h/ in the form *qehwa* "coffee": the same participant pronounced this word (in the translation task from the list of Dutch words) as [ʔawa] and immediately repeated it as [ʔahwa]. Similarly, participant 2 pronounced the word *ɛendhum* "they have" in the narrative very much like *ɛendum*, with a considerable weakening of the [h] sound. In the perception experiment, both participants correctly identified the opposition /H/ vs. /h/ in all four contexts.

Other substitutions affected segments which were not dealt with in the perception experiment, like the segments /R/ and /r/. Both of these were substituted with the pharyngeal [ɛ] and the velar/uvular [ɣ], as shown in table 6:

Table 6 Substitutions of /R/ and /r/ in the narrative of participant 3

Target form	Attested form	Gloss	% subs
/R/			
<i>dʝRu</i> (x3)	deu	dog	100
<i>žRana</i>	zeana	frog	
<i>lʔaRD</i>	lʔaγD	floor	
<i>šežRa</i>	sezeα	tree	
<i>žebRu</i>	zebeu	they found	
<i>feRHu</i>	fe Hu	they were happy	
<i>Ras</i> (x2)	eas	head	
<i>Ras</i>	γγas	head	
<i>beRRa</i>	beγγa	outside	
<i>mRiD</i>	mεiD	sick	
<i>DaRSa</i>	DaγSa	tooth	
/r/			
<i>kbır</i>	kbıγ	big	100
<i>žrı</i>	zeı	run	
<i>katežrı</i>	katezγı	She is running	

Participant 3 resorted to the substitution of /R/ in all fourteen words which would normally be pronounced with this emphatic [R]. The substitutes for this segment were [ε] (8 cases), [γ] (5 cases) and in one case, namely the form *feRHu*, the [R] was deleted and the schwa was lengthened. He also substituted the [r] in three forms, using the same sounds as in the case of [R], namely [γ] (2 cases) and [ε] (1 case).<sup>8</sup>

None of the other participants resorted to the substitution of the [R] and [r] sounds, at least not to a degree where I could hear the substitutions. However, there were other cases of substitutions. To begin with, participant 26 and participant 3 both substituted the palato-alveolars /š/ and /ž/ by the alveolars [s] and [z]. The instances where these substitutions occurred are presented in table 7.

As in the case of the opposition /q/ vs. /k/, the merging of /š/ with /s/ and /ž/ with /z/ can be explained by recourse to the influence of the Dutch phonological system as well as by the markedness of the alveo-palatals /š/ and /ž/. Dutch lacks the oppositions /š/ vs. /s/ and /ž/ vs. /z/, and both /š/ and /ž/ are much less frequent in natural languages than the alveolars /s/ and /z/ (Kenstowicz 1994: 30). We have already seen how difficult it is to disentangle the two explanations when we discussed the substitution of /q/ by /k/ above.

<sup>8</sup>The alternation between /r/ and /γ/ is attested in Dutch (Pulte 1971: 23), and the alternation between /R/ and /γ/ is attested in Baghdadi Arabic (Abu-Haidar 1990: 48).

To conclude this subsection on sound substitution, we can note the following. All of the segments that were subject to substitution are lacking from the Dutch phonological system. It was not possible to find a single explanation for this process of substitution. Thus, it was said that both the influence of the Dutch phonological system as well as the markedness of the substituted segments could have played a role in the process under discussion.

### 3.2 Geminate reduction and syllable structure

Another pervasive characteristic of the phonology of second generation participants is geminate reduction, or the simplification of clusters of two identical segments. Geminate reduction will be discussed together with syllable structure since these two phenomena are very much related: the reduction of a geminate means that one position in a syllable has become empty.

Before proceeding to the actual data that illustrate geminate reduction, the following should be noted. The syllable representations that are discussed here are the actual syllabifications of the utterances of the informants. That is, they are phonetic syllables. Moreover, there will be no distinction made between lexical geminates and derived geminates, since such distinction does not seem to affect the process in question. The instances that illustrate geminate reduction are presented in table 8.

The form *men Seržem* "from (a) window" (participant 2) is used in the same sentence as another indefinite noun *kelb* (*kelb TaH men Seržem* "Dog fell from (a) window"), which sounds rather strange, especially after the narrator had already introduced the dog and the frog (see Appendix 4). It is not easy to know whether the participant is resorting to geminate reduction in the case of /l-Seržem/, and cluster reduction in the case of /l-kelb/, or is simply using indefinite nouns as a general strategy. There are other forms in the narrative of this participant which suggest that he is applying a geminate reduction, like the form *kan hadak nmel...* "those ants were...." The form *Seržem*, which prompted the present discussion, can be used, like other indefinite nouns, if it is followed by a possessive pronoun that defines it (e.g. *Seržm-i* "my window") (Heath 1989: 21), or if it is followed by something else that can define it (e.g., adjective, noun, prepositional phrase), as in *TaH men Seržem kbir* "he fell out a big window", or *men Seržem xalu* "from the window of his uncle." Other cases where noun indefiniteness is acceptable are those where nouns are preceded by demonstrative pronouns, especially in introducing characters in a narrative style.

Table 7 Substitution of [š] and [ž] in the narratives of participants 3 and 26

Participant	substituted forms	Gloss	forms not substituted	% subs
03	[š]			
	ssezεa (x4)	tree		100
	katsuf (x5)	she sees		
	msit	I went		
	suft (x2)	I saw		
	masi	not		
	katemsı	she goes		
	[ž]			
	zeana	frog		100
	zebeu	they found		
	zeı	run		
26	[š]			
	msat (x2)	she went	weyšuf	69
	kaysuf	he sees	mšat	
	kaysufha	he sees her	šeržem	
	msa (x3)	he went	išuf	
	ısuf (x3)	he will see	mša	
	ısufha	he'll see her	yšuf	
	was	whether	šta	
	ma kanets	she wasn't		
	saf	he saw		
	ssezra	tree		
	seddateh	she caught him		
	[ž]			
	bezzeed	hard		100
	ssezra	tree		
	ziha	side		
	za	he came		

Table 8 Instances of geminate reduction

Participant	Target form	Attested form	Reduced geminate	Gloss
01	<i>waHed dderri</i>	waHed derri	dd	a boy
02	<i>m eSSeržem</i>	men Seržem	SS	from the window
	<i>hadak nmmel</i>	hadak nmel	nn	those ants
	<i>kayen žžrana</i>	kayen žrana	žž	There is the frog
03	<i>nnHel</i>	neHHel	nn	bees
	<i>ššežRa</i>	sezεa	ss	(ššežra) tree
	<i>kaDDenn</i>	katdun	DD	she thinks
	<i>d eżžRana</i>	d ezeana	zz	(d eżžrana) of frogs
06	<i>eend nnHel</i>	eend nHel	nn	at the bees
	<i>xeSSni</i>	xeSni	SS	I have to
	<i>f eżžrana</i>	f ežrana	žž	in the frog
	<i>u žžrana</i>	u žrana	žž	and the frog
	<i>kayneqgez</i>	kayneqaz	qq	it is jumping
	<i>f ežžerda</i>	fel žerda	žž	in the garden
	<i>TeyyHatu</i>	TayHatu	yy	it dropped him
	<i>hadik žžrana</i>	hadak ežrana	žž	that frog
	<i>kaygul lıhum</i>	kaygul (l)ıhum	ll	he tells them
08	<i>f eSSbaH</i>	f eSbaH	SS	in the morning
	<i>m eSSeržem</i>	men Seržem	SS	from a window
	<i>waHed ššežra</i>	waHed ešežra	šš	a tree
	<i>haduk nneHlat</i>	haduk neHlat (x2)	nn	those bees
26	<i>u ddah</i>	u dah	dd	and he took him
	<i>f eššeržem</i>	f šeržem	šš	in (at) the window
	<i>f eSSebbaT</i>	f SebbaT	SS	in the shoe(s)
	<i>hadik ddebbaan</i>	hadik debbaan	dd	those flies

Thus both sentence 10a (noun with definite article) and sentence 10b (noun without definite article) are acceptable. The two sentences are taken from the narrative of participant 55 from the control group.

(10)

a    *hada waHed lweld gales*  
       this    a        boy        sitting  
       This is a boy (who is) sitting

b    *hadı qereεa u dayer fiha žrana*  
       this    a bottle and    put    in it frog  
       This is a jar, and he has put a frog in it

However, after a noun has been introduced, it is usually referred to as a definite noun, as in the case of the same narrator (participant 55 from the control group). There are a lot of forms in table 8 above which are unequivocal cases of geminate reduction, like *xeSni* [xeSSni] "I have to" and *dah* [ddah] "he took him/it", since these verbs are always pronounced with a geminate.

An interesting example that combines gemination and syllable structure is the word *neHHel* in the table 8. It is an example of degemination, or rather of 'geminate transfer': one geminate is reduced and one simple segment is geminated. A possible explanation for this transfer is the syllable structure of the two forms: [neHHe] contains no syllable internal consonant clusters (the \$ indicates syllable boundaries): \$neH\$He\$, whereas *nnHel* begins with a three consonant cluster: \$nnH-\$); The form *neHHel* is made of two CVC syllables, a syllable structure less marked than CCVC in natural languages (Kaye and Lowenstamm 1981: 296). In this sense, it may be said that the form [neHHe] produced by the participant is easier to pronounce than the correct form *nnHel*.

Geminate reduction can be attested within the same word as well as at word boundaries. In fluent speech, or speech at a fast rate for that matter, schwa vowels inserted between words are hardly audible if at all. Some participants from the experimental group resort to lengthening the schwa vowel in C-CC (where the first consonant belongs to a different word than the last two consonants), as in the examples in 11:

- (11) *hadik* [e]ʒʒrana                      *u hadak* [e]dʒru  
       "that frog"                                "and that dog"

The lengthening of the schwa vowel in the phrases in 11 might be a way of getting around the consonantal cluster CeCC<sup>9</sup>, which would be difficult to pronounce with a very short schwa, especially for speakers of MA with a low proficiency.

Staying at the level of word boundaries, a relevant example to illustrate failure of resyllabification at this level is given by participant 3. In the phrase *u huwwa lfuq* "and he was above," he inserted a schwa vowel between the first and the second words resulting in [u huwwa el fu?]. In this example, the schwa in *el fu?* would normally disappear, since the preceding word ends in a vowel, thus yielding [\$u\$huw\$wal\$fu?].

The reverse of the above situation is also attested: a participant already syllabifies the definite article with a preceding determiner (*waHed* "one, a"), before even knowing the noun to be defined. In this case the boundary between words is already crossed and proper resyllabification has taken place. When the retrieved

---

<sup>9</sup>Technically speaking there is no cluster of three consonants, since the schwa vowel separates the geminate from the initial consonant. However, the schwa in MA, as in Berber, is very short, to the extent that in some analyses of MA (e.g. Bull 1991) and Berber (e.g. El Medlaoui 1985, El Aissati 1989) it is simply not recognized.



noun requires the assimilation of the article /l/ some participants fail to meet this requirement. An example of this is *waHdel* [pause] *zeana* "a frog", where participant 3 took a long pause before saying *zeana*. The same participant produces the following utterance: *f el waHed el...SebbaT* "In the a the shoe", where the assimilation of /l/ and /S/ is not applied.

In some cases the geminates are not reduced but dissimilated. This happens when the article /l/ is pronounced instead of being assimilated to the initial consonant of a noun, as in the following example by participant 3: *hadik ššežra* "that tree" is realized as *hadak el sezeə*. In this case, there was no syllable alteration<sup>10</sup>.

### 3.3 Frequent insertion of pauses

Although insertion of pauses is not itself a phonological phenomenon, it can affect the process of phonological encoding in a number of ways. We have already seen an example of this (3.2) with participant 3 who inserted a schwa vowel in the form *huwwa el fu?* "he (is) above." If there had been no pause between the word *huwwa* and the word *lfu?*, participant 3 would have applied the right syllabification, i.e. without the insertion of a schwa.

A comparison of the recordings of the experimental group with those of the control group also reveals phenomena other than pausing, which can be related to 'ease of production': the control group narratives have less hesitations, less fillers such as 'eh', 'em..', etc. than those of the experimental group, and in particular those of some participants with a low proficiency (participants 2, 3, 7, 26). Such ease of production is perhaps better explained by resorting to the concept of 'ideal delivery' as formulated in Clark and Clark (1977: 1261-62): "In the ideal delivery, most types of clauses are executed in a single speech train under one smooth intonation contour." Of interest to the present investigation is the observation that speakers pause phrase-internally, which is a sign of lack of fluency and absence of ideal delivery: "In the ideal delivery they [speakers] can breathe at [grammatical] junctures, but not within clauses."<sup>11</sup>.

---

<sup>10</sup>It sounds counter-intuitive to say that a vowel is lengthened without syllable structure being affected. Yet, it should be remembered that in MA there is no vowel length contrast. At the phonetic level, a schwa, independent of its length, will occupy one syllable position only.

<sup>11</sup>We assume that the participants who frequently resort to pausing have problems with language and not with the concept level. Using Levelt's (1989: 11) terminology, one can stipulate that the participant has a conceptual message ready for the formulator to turn it into a linguistic message, and that even after the first step in the translation of the conceptual message has been

#### 4. Conclusion

This chapter dealt with perception and production in the phonology of second generation Moroccan adolescents. At the perception level, an experiment on sound discrimination was presented and briefly discussed. The results of this experiment show that there is no significant difference between the second generation Moroccans and the Moroccan control group. This was found to be true also for phonological oppositions that the Dutch control group found difficult to identify.

At the level of production, the following properties could be identified on the basis of data from narratives and a list of items: (i) substitution of marked segments by unmarked ones, (ii) geminate reduction, and lengthening of schwa vowels, (iii) failure to syllabify across word (phrase) boundaries, and finally, (iv) frequent insertion of pauses.

The general conclusion that can be drawn from the results discussed in this chapter is that at the level of perception the second generation group does not seem to show any signs of attrition in the phonological system of MA. At the level of production, however, there is some evidence that the speakers of MA as a minority language behave differently from speakers of MA in Morocco. This different behavior was interpreted in part as a result of the influence of the Dutch phonological system on MA.

The variation between participants and within the data of the same participant makes it difficult to formulate characteristics of the phonology of language shift and language loss. It must be clear by now that one cannot generalize over all participants. Variation in contexts of language loss has been frequently noted as an indicator of an unstable language situation (e.g. Gal 1979, Mougeon and Beniak 1991). Gal (1979) notes how variation can be considered a pathway for linguistic features, which in situations of language shift tend to follow a pattern of categorical-variable-categorical development. That is, before the onset of language shift, there is more homogeneity in a speech community than during the process of shift. In the latter situation, speakers tend to exhibit more variable behavior in their language use. This is perhaps why it is difficult to make some categorical statements regarding the behavior of Moroccan second generation adolescents.

---

achieved (the grammatical encoding), the search for a lexical item required is hindered or takes time to be found. That is, the time taken by the participant is not used in searching for concepts, but in 'finding' the linguistic form in the language in which s/he is asked to tell the story, i.e. MA.

## **Chapter 6**

### **The perception and production of relative clauses**

#### **0. Introduction**

This chapter is organized as follows. Section one provides a brief review of the literature on the production and perception of relative clauses. Section two is concerned with a definition and an overview of relative clauses in MA. Section three deals with an experiment on relative clause comprehension in MA. An analysis of relative clauses in production data is presented in section four. Finally, section five sums up the results of the perception and production analyses and their implications for language loss of MA.

#### **1. Relative clauses: an overview**

The perception and production of relative clauses have been the subject of a considerable amount of research (Brown 1971, Hakuta 1981, Clancy, Lee, and Zoh 1986, Dasinger and Toupin 1994). A number of hypotheses have been formulated to account for relative clause processing as a function of the role of the different factors involved in its structure, such as word order, the function of the relativized noun in the main clause and the relative clause, and the age of the learner. Research on the production of relative clauses has shown that these are acquired at a rather late age, after the acquisition of simple clauses and conjoined clauses has been completed (Clancy, Lee, and Zoh 1986).

##### **1.1 The structure of relative clauses**

A relative clause can be defined as "a type of noun modification structure which constitutes part of a complex NP constituent." (Dasinger and Toupin (1994: 459). Keenan and Comrie (1977) define a relative clause as "any syntactic object specifying a set of objects in two steps: A larger step is specified, called the domain of relativization, and then restricted to some subset of which a certain sentence, the restrictive sentence, is true. The domain of relativization is expressed in surface by the head NP, and the restrictive sentence by the restrictive clause."

The relative clause is usually, but not always, linked by a relative pronoun to the NP it specifies. Dasinger and Toupin (1994:459) provide some illustrative examples of different types of relative clauses. These examples are reproduced to show some properties of relative clauses which are especially relevant to our discussion later on in this chapter (section 4). They are taken from narratives based on the same picture book that we used in our collection of semi-spontaneous data, i.e. Mayer (1969).

- (1) a. Headless, restrictive: [He] holds onto **what looks like a branch...**
- b. Infinitival, restrictive: [The dog] has found **something new to look at...**
- c. Nonrestrictive: **The boy, who had climbed the tree,** looked in it.
- d. Participial, nonrestrictive: There's **a deer hiding up there.**

In example 1a the head referent of the relative clause is a wh-pronoun, which makes it a free, or headless, relative. The second example illustrates the occurrence of a non-finite verb and the non-occurrence of a relative pronoun in a relative clause. The nonrestrictive relative illustrated in example 1c "may serve to further comment on, or predicate something about, a fully-identified referent" (Dasinger and Toupin 1994: 460). Finally, example 1d gives an example of a participial clause, which, like the example in 1b, has no relative pronoun and no finite verb.

Dasinger and Toupin (1994) also offer a useful categorization of the discourse functions of relative clauses. The functions most directly relevant to our analysis of production data are the following. The first one is that of identifying new referents: a participant uses a relative clause to introduce a new referent. For example, to refer to the beehive, some participants define it as "that [thing] where the bees live." The second function is that of reidentifying old referents: a participant uses a relative clause to point out that the referent in question was already defined at an earlier stage. For example, at the end of the narrative, some participants identify the frog that the boy took as "the frog that had run away." The third relevant function is that of topic continuity. This was applied by one participant in the following sentence: "Then came a deer which hit him with her horns." The complete list of the relative clauses in our data is given in section 4.

## 1.2 Perception of relative clauses

A number of hypotheses have been formulated to account for cross-linguistic differences and similarities in the processing and production of relative clauses. Below is a brief review of these strategies adapted from Hakuta (1981) and Clancy, Lee, and Zoh (1986).

### **a. Left-to-right strategy**

The main tenet of this hypothesis is the tendency to relate each word that is heard in a stream of speech to the word "immediately preceding it [...], attempting to assign a semantic/syntactic interpretation to each constituent as it is heard." The left-to-right strategy has inspired some major hypotheses about relative clause processing. One such hypothesis is Slobin's (1973) operating principle which stipulates the avoidance of interrupting or rearranging linguistic units. The effect of this principle is that it predicts that sentences whose related parts are separated will be more difficult to process than sentences whose related elements are not interrupted. Slobin's operating principle provides an explanation for the difficulty that children face in interpreting a sentence like "the man (that fell down) ran away," where the relative 'that fell down' interrupts the main clause.

A second major hypothesis based on left-to-right processing is the minimal distance principle proposed in Chomsky (1969: 10). According to this principle, "the implicit subject of the complement verb is the NP most closely preceding it." Thus, when an underlying subject does not appear in the surface structure of a complement such as "John promised to go," the closest preceding noun will be interpreted as the 'missing' constituent. In the sentence "the duck that licked the frog bit the pig" the relative clause 'that licked the frog,' which has a missing subject, will be assigned the noun 'the duck' as subject.

### **b. Canonical schema**

The canonical schema has been proposed to account for the interpretation of NVN English sentences as SVO by children. This interpretation was argued to be based on the rigid word order of English, which makes children aware of the reliability of interpreting NVN as SVO. Clancy et al. cite Smith (1974) who notes that English speaking children will find the sentence "the duck licked the frog that bit the pig" easy to interpret, because both the main clause and the relative clause contain canonical NVN (SVO) word order. However, these children will show difficulty interpreting the sentence "the duck that the frog licked bit the pig" because it contains no NVN sequence.

The canonical schema hypothesis is also behind the development of a strategy of 'conjoined sentences,' which stipulates that a sentence with a relative clause will be interpreted like a sentence that contains two conjoined sentences. For example, the sentence "The duck that licked the deer bit the frog" will be interpreted as the duck licked the deer and bit the frog.

It is not clear what prediction the conjoined sentences strategy will make regarding the interpretation of a sentence like "the duck licked the deer that bit the frog". This sentence can be interpreted both as "the duck licked the deer and the deer bit the frog" and, incorrectly, as "The duck licked the deer and bit the frog". Similarly, it is not clear what prediction the conjoined sentences strategy can make regarding an MA sentence like:

- (2) *ssbee ka-ymesH -u ddubb lli ka-ybus lqerd*  
 the lion prog-pat-him the bear which prog-kiss the monkey  
 "The bear which is kissing the monkey is patting the lion"

Will it be correctly interpreted as in 3a, or wrongly interpreted as in 3b:

- (3) a. *ssbee kaymesHu ddubb u ddubb kaybus lqerd*  
 "The lion is being patted by the bear and the bear is kissing the monkey."  
 b. *ssbee ka-ymesHu ddubb u ka-ybus lqerd*  
 "The lion is being patted by the bear and is kissing the monkey"

In fact, conjoining can include so many possibilities that it loses its strength as a principle.

### c. Parallel function

This hypothesis stipulates that sentences in which the relativized noun has the same function in the main clause and in the relative clause (subject/subject, or object/object) will be easier to interpret than sentences where the function of the head noun is not the same in the two clauses (subject/object, or object/subject) (Sheldon 1974). The following sentence is an illustration of the parallel function: "the duck that licked the frog bit the pig," where the duck is subject of the main clause and subject of the relative clause. A sentence where the function of the head noun is not parallel is the following: "The duck that the frog licked bit the pig," where the relativized noun 'the frog' is object in the main clause and subject in the relative clause.

### d. Accessibility hierarchy

Based on cross-linguistic studies, Keenan and Comrie (1977) propose the following hierarchy of functions of relativized nouns: subject, direct object, indirect object, object of preposition, possessive noun phrase, and object of a comparative particle

(Hakuta 1981). This accessibility hierarchy is proposed to reflect the ease of comprehension of sentences with relative clauses. Thus, sentences with relativized subjects will turn out to be the easiest to understand, while those with a comparative particle will be the most difficult to understand.

## 2. Relative clauses in MA

Relative clauses in MA are postnominal; they occur after the noun they modify or specify, as in most natural languages which have verb-medial order (Keenan 1985). The four types of relative clauses discussed in section 1.1 are all attested in MA, as shown by the following examples:

(4) a. **Headless, restrictive:**

*ža hadak lli y-kun f l-lil*  
 he came that prog-is in the-night  
 "Came that [an owl] which is found at night."

b. **Infinitival<sup>1</sup>, restrictive:**

*lga ši Haža ždida y-šuf fi-ha*  
 he found some thing new prog-look in-it  
 "He found something new to look at."

c. **Nonrestrictive:**

*hadak lweld, lli Tlee fug š-šežra, šaf fi-ha*  
 that boy, who climbed on the-tree, looked in-it(fem.)  
 "That boy, who climbed on the tree, looked in it."

d. **Participial nonrestrictive:**

*kayen waHed l-far mxebbeε temma*  
 there is a the-mouse hiding there  
 "There is a mouse hiding there."

Word orders SVO and OVS can both occur in a main clause as well as in a relative clause. As we saw earlier (chapter 4, section 2), in OVS constructions, the verb has to have a pronoun clitic, which agrees with the object. It is not possible to have a VSO order in the relative clause, because it is necessary for the clause to have a head noun. Headless or free relatives do not have to be headed with a noun, but there has to be a relative pronoun before the verb, as in example 4a above. The relative pronoun 'lli' assumes the function of subject in this relative clause, making

---

<sup>1</sup>Strictly speaking there is no infinitive in MA (Youssi 1992: 38). For convenience of comparison with the English example, I take the imperfective ('inaccompli') aspect as the equivalent of the infinitive.

it an SVO clause. This lack of symmetry in the VS(O) word order, i.e. its occurrence in the main clause but not in the relative clause, is the reason behind its exclusion from the experiment on relative clause perception, which is dealt with below.

### **3. An experiment on the perception of relative clauses in MA**

An experiment on the perception of relative clauses in MA was carried out to highlight any differences in processing strategies between the control group and the second generation group. The results of this experiment will be explained in two steps. First, an attempt will be made to interpret the results of the control group in light of the processing strategies reviewed in section 1. Second, a comparison between the two groups will be made to see if and in what respect these two groups differ from each other.

#### **Participants and material**

Twenty participants from the second generation group, and thirty participants from the control group took part in the present experiment. Sixteen complex sentences were chosen for this experiment. These were adopted from Bos and Verhoeven (1994). Three nouns referring to three animal types were used: 'ssbee' "lion", 'ddubb' "bear", and 'lqerd' "monkey". Four transitive verbs were selected: 'qres' "pinch", 'mseH' "pat", 'Dreb' "hit", and 'bus' "kiss". Each sentence was made up of three nouns and two verbs. Each verb and noun was equally represented in the sentences (eight occurrences of each verb, and sixteen of each noun; see appendix (5A) for a complete list of these sentences).

A sheet of paper with the three pictures of the animals involved in the experiment was prepared to go with the sentences (See Appendix 5C).

#### **Design and procedure**

Two levels of word order SVO and OVS of the matrix clause were crossed with four functions of the relativized noun, subject in main clause and relative clause (SS), subject in main clause, object in relative clause (SO), object in main clause, subject in relative clause (OS), and object in main clause, object in relative clause (OO), yielding a 2 x 4 design.

Participants sat for the experiment individually. Before the experiment started, participants were asked if they knew the names of the three animals in the picture. After making sure they did, each sentence was read twice out loud for each



participant, who was asked to indicate on the picture sheet who did what to whom. For example, if the monkey did something to the lion, and the lion did something to the bear, the participant was expected to point at the picture of the monkey and at the picture of the lion (in this order), and then at the picture of the lion again and at the picture of the bear (in this order). In this way, the participants did not have to repeat the sentence.

### 3.1 Results

The answers of the experimental group and the control group were coded for 'right' or 'wrong' before they were submitted to a MANOVA analysis. An answer was considered right if the function of the head noun was correctly interpreted in both the main clause and the subordinate clause. The results of the MANOVA analysis are summed up in table 1.

Table 1: MANOVA results of the relativization experiment

Source of variation	DF	F
Group	1,38	0.40
Head noun function	3,114	6.31**
Word order	1,38	15.42**
Group*head noun function	3,114	2.91*
Group* word order	1,38	2.32
Word order*head noun function	3,114	2.47
Group*head noun function*word order	3,114	3.02*

DF degrees of freedom numerator/denominator

\* significant at the .05 level

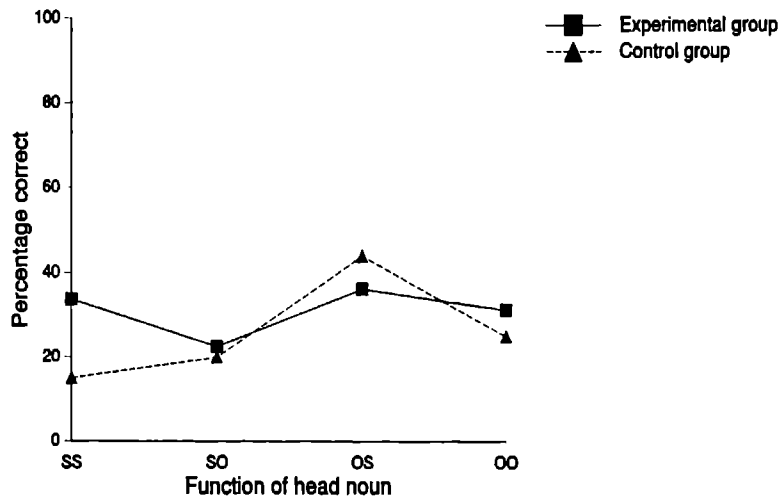
\*\* significance at the .01 level

The non-significance of the main effect 'group' indicates that the experimental group and the control group did not differ substantially from each other in how they processed the complex sentences in the overall task. The main effect 'head noun function' (SS, SO, OS, OO) turned out to be significant, which shows that the type of function the relativized noun assumes does affect ease or difficulty of processing a relative clause. The main effect 'word order' also turned out to be significant. This indicates that the word orders SVO and OVS differ from each other in how they affect the processing of relative clauses.

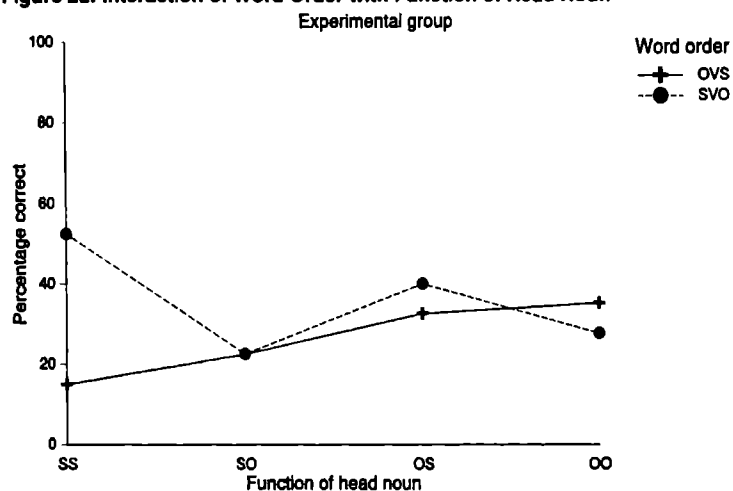
The absence of a statistically significant difference in the main effect 'group' does not mean that the two groups acted in a similar fashion at all levels of the

experiment. This is made evident by the fact that two interactions involving group turned out to be significant: the interaction of 'group' with 'head noun function' ( $p < .05$ ) and 'group' with 'word order' (SVO, OVS) with 'head noun function' (SS, SO, OS, OO) ( $p < .05$ ). The interaction of group with head noun function indicates that the role of the function of head nouns was different in the experimental group and the control group. This interaction is portrayed in figure 1. The interaction of 'group' with 'word order' (SVO, OVS) with 'head noun function' (SS, SO, OS, OO) is shown in figures 2a and 2b.

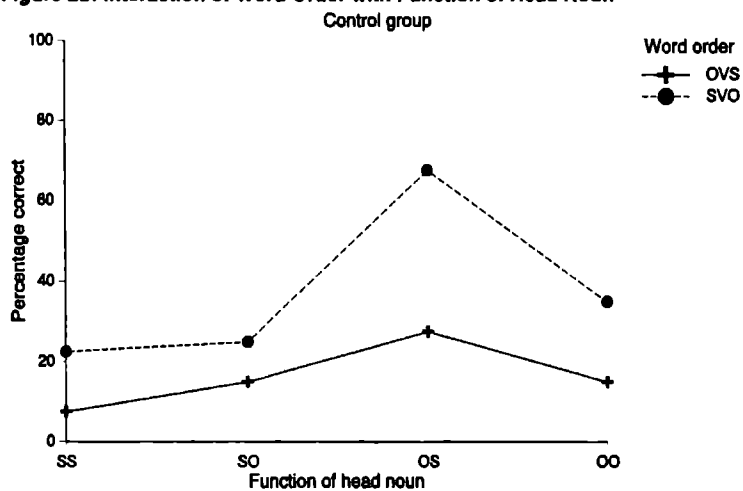
**Figure 1: Interaction of Group with Function of Head Noun**



**Figure 2a: Interaction of Word Order with Function of Head Noun**



**Figure 2b: Interaction of Word Order with Function of Head Noun**



### 3.2 Discussion

We will first attempt an explanation of the order of ease of processing for the control group in light of the hypotheses discussed in section 2 above, and then move on to a comparison of the results of the second generation group with those of the control group. For ease of reference during this discussion, we reproduce the mean scores of both groups for each of the eight configurations in the complex sentences.

Table 2: Mean percentages of correct scores in each of the eight sentence types.

	S V O				O V S			
	SS	SO	OS	OO	SS	SO	OS	OO
Experimental group	52.5	22.5	40	27.5	15	22.5	32.5	35
Control group	22.5	25	67.5	35	7.5	15	27.5	15

#### a. Results of the control group

To begin with, the anti-interruption principle alone, which is based on the left to right strategy, cannot explain the results of the control group. This principle predicts that center-embedded sentences, i.e. sentences of the type N [Rel clause] V N would be more difficult to process than sentences where the relative clause does not interrupt the main clause, i.e. left-branching sentences ([Rel Clause] NVN) and right-branching sentences (N V N [Rel Clause]). In our experiment there were no left-branching sentences since, as was said above (section 1), the relative clause in MA is postnominal. There were four sentence types with center embedded relatives: SVO/SS, SVO/SO, OVS/OS, and OVS/OO. The other four types were all right branching.

Indeed, within SVO word order the center embedded configurations SVO/SS and SVO/SO turned out to be more difficult to process than the two right branching configurations SVO/OS and SVO/OO. As can be seen in table 2 above, the highest score obtained by the control group was for the right branching configuration SVO/OS. A contrast analysis of head noun functions within SVO word order revealed a significant difference between SVO/OS and SVO/OO ( $t=-2.43$ ;  $p<.019$ ), thus confirming that SVO/OS is indeed the easiest configuration for the

control group. However, for sentences with OVS word order, the control group found the sentences with center-embedded relative clauses, i.e. OVS/OS and OVS/OO, slightly easier to process than the sentences with right branching relative clauses. These results, then, are counter-examples to the hypothesis that right branching relative clauses are easier to process than center embedded relative clauses.

The canonical schema predicts that in a language with SVO as a canonical word order, sentences with an NVN sequence will be interpreted as SVO. This would mean that sentences of the type SVO/OS and SVO/SS in our data would be the easiest to interpret, since both the main clause and the relative clause have the canonical word order SVO in MA. The results show that this was the case for the control group in the SVO/OS configuration where this group obtained the highest mean percentage of its correct scores (67.5). The configuration SVO/SS, however, turned out to be more difficult than the SVO/OO which has an SVO word order in the main clause but an OVS word order in the relative clause ( $t=2.28$ ;  $p<.28$ ). Similarly, the canonical schema alone cannot explain why two sentences which have an SVO word order in their relative clauses and an OVS word order in their main clauses would obtain very different results: for the configuration OVS/SS the control group had 7.5% correct scores, while for the configuration OVS/OS the percentage of correct scores was 27.5 ( $t=2.32$ ;  $p<.26$ ). The canonical schema, if taken to refer to the word order of the main clause and not to that of the relative clause, will correctly predict that sentences with SVO word order in matrix clauses are easier to process than sentences with OVS word order in main clauses. In all the cases which differed only in the word order of the main clause (SVO vs. OVS), the control group obtained higher scores for sentences with SVO in main clause (see figure 2b). However, this would remain only a partial explanation of the results of the experiment, since the differences between the functions of relativized nouns cannot be explained by the canonical word order hypothesis.

The parallel function hypothesis (Sheldon 1974) also runs into problems in explaining the results of the control group. This hypothesis predicts that a sentence where the relativized noun has the same function in the main clause and the relative clause (SS and OO) will be easier to process than sentences where the function of this noun is different in the two clauses (OS and SO). The explanation we gave above concerning the superiority of SVO/OS over the other configurations can also be called on here to refute the parallel function prediction. Contrary to what this hypothesis predicts, the OS head function turned out to be easier than both SS and OO in SVO. The fact that this holds true for SVO makes it unnecessary to further

investigate into the OVS word order, since the parallel function hypothesis does not take word order into consideration.

Another hypothesis which falls short of explaining the results above is the accessibility hierarchy proposed by Keenan and Komrie (1977). As said earlier, this hypothesis predicts that sentences with relativized subjects (SS and OS) will be easier to process than sentences with an object relativized noun (SO and OO). The results of the control group show that OS (47.5% correct answers) was easier than SO (20%) and OO (25%), partly confirming the hypothesis discussed here. It should be noted that we have already seen above that a contrast analysis did confirm the superiority of OS (in SVO) over the other head noun functions within SVO. However, SS turned out to be the most difficult function for this group (15%). Here too, we can call on the contrast analysis which confirmed that SS (combined with SO) differed significantly from OO, the latter being easier to process (see figure 2b above).

So far, none of the hypotheses discussed in section 1.2 seems to be able to account for the behavior of the control group regarding relative clause processing. The only one that was found to partly explain the superiority of the results obtained for the SVO word order is the canonical word order hypothesis. A possible explanation for this state of affairs has to do with the nature of the stimulus sentences. These are all made of three nouns and two verbs. As we shall see in section 4 below, this type of complex sentence is almost non-existent in the narratives of both the control group and the experimental group. The type of complex sentences that are more frequent in the narratives of these two groups are made of two nouns and two verbs. It is possible that if this latter type of complex sentence were chosen as stimuli, the participants might have responded differently. This remains a possibility that needs to be tested.

Before turning to the differences between the control group and the second generation group, a few words are in order about the possibility that the morphology of MA might play a role in relative clause processing. Bos and Verhoeven (1994) suggest that the pronoun clitic attached to verbs of the OVS sentences might affect the ease of relative clause processing. That is, sentences in which a verb carries an object pronoun suffix might be more difficult to interpret than sentences without such a suffix.

As was said in section 2, OVS word order in MA requires the verb to have a suffix that agrees with the object. Sentences with OVS word order in the main clause and the relative clause have two such suffixes, those with OVS in one clause only have one such suffix, while neither of the two verbs in sentences with SVO

has such a suffix. If this suffix adds to the burden of processing, then one would expect sentences with two suffixes (OVS/OO and OVS/SO) to be more difficult than sentences with one suffix, i.e. OVS/SS, OVS/OS, SVO/OO, and SVO/SO. By the same token, sentences with one suffix would be more difficult to process than sentences with a non-suffixed verb, namely SVO/SS and SVO/OS. Indeed, SVO/OS, which has no suffix, did turn out to be the easiest configuration, followed by SVO/OO, which has one suffix.

An apparent counter-example to the observation relating the number of suffixes to ease of processing is provided by the configuration OVS/SO, which has two suffixed verbs. This configuration turned out to be easier than OVS/SS which has one suffixed verb (percentage correct 15% and 7.5% respectively). However, this difference did not reach statistical significance, and cannot be used as a solid counter-example to the suggestion of Bos and Verhoeven. Similarly, the SVO/OO configuration, which has one suffixed verb, was found easier to interpret than the SVO/SS configuration, which has no suffix on either of its verbs. The former had 35% correct answers, while the latter had 22.5%. This difference was not statistically significant ( $t=1.28$ ;  $p<.21$ ).

The suggestion that the number of suffixes in a complex sentence in MA can be a determining factor in ease or difficulty of processing runs into the following difficulties. First, the absence of a statistically significant difference between the configurations SVO/SS and SVO/OO argues against this suggestion, since the configuration without a suffix (SVO/SS) was not found to be easier than that with one suffix (SVO/OO). Second, following this suggestion, the configuration OVS/SO with two suffixes, should be more difficult than the configuration OVS/SS, which has one suffix (in the main clause). This was not borne out by a contrast analysis ( $t=0.99$ ;  $p<.33$ ). Third, the configuration OVS/SS (with one suffix in the main clause) should be as easy as the configuration OVS/OS, which also has one suffix in the main clause. Yet, a contrast analysis showed that the second configuration was easier than the first one ( $t=2.19$ ;  $p<.035$ ). Finally, the configuration OVS/SO, which has two prefixes, was not found to be more difficult than OVS/OS, which has only one suffix ( $t=1.58$ ;  $p<.12$ ).

The explanation of the results of the control group showed that none of the proposed hypotheses in the literature can account for these results. A combination of the canonical schema hypothesis with the number of suffix attachments in the complex sentence has, so far, given the most viable explanation for the results of the control group.

### b. Comparison of the control group and the experimental group

The analyses at the beginning of this section showed two statistically significant differences between the two groups, namely at the level of the interaction of group by head noun function, and group by word order by function of relativized noun. The two groups also differed in the order of difficulty of the head noun function. The order of ease of processing of the four different functions of head noun within each group is given in table 2:

Table 3: Functions of head nouns ordered according to ease of processing (from easiest to most difficult)

Experimental group:	OS	>	SS	>	OO	>	SO
Control group:	OS	>	OO	>	SO	>	SS

The superiority of the second generation scores over those of the control group might be due to non-linguistic factors, like familiarity with complex games, or some problem-solving strategy where the second generation group has more skill than the control group. This might be due to the differences between education systems in the Netherlands and in Morocco. In the Netherlands, it is common for pupils to play games, have stories read to them, and perform a number of tasks for cognitive development. In the public school system in Morocco such practices are not common.

Providing an accurate explanation for the problem at hand requires at least a comparison of linguistic knowledge with non-linguistic knowledge, and how non-linguistic skills might affect the language capacity. This is, however, beyond the scope of the present study.

The largest discrepancies between the two groups were detected at the level of the OS and the SS head noun functions in the SVO configuration. A contrast analysis showed that this difference is statistically significant in both configurations (SVO/SS:  $F(1,38) = 4.9$ ,  $p < .033$ ; SVO/OS:  $F(1,38) = 4.48$ ,  $p < .034$ ). These two differences were the only ones that reached statistical significance. The control group showed a clear preference for the configuration SVO/OS (67.5% correct answers) over all the other configurations, while the second generation group had a clear preference for the SVO/SS configuration (52.5% correct answers).



A comparison of the types of errors made by the second generation group with those made by the control group will shed more light on the preference of the experimental group for the configuration SVO/SS. Two points have to be made about this comparison. First, only cases where the relativized noun is not substituted by another noun are considered. Cases where another noun is relativized<sup>2</sup> are not disregarded. To illustrate, consider sentence (5) below:

- (5) The bear which is patting the lion is patting the monkey

The answer expected is that the bear did both actions, i.e. the relativized head has an SS function. In other words, participants are expected to point at the bear, then at the lion, and again at the bear, and at the monkey. If an answer is given where the bear is not relativized, this answer is not considered in the error analysis. The following are possible answers where the lion is relativized instead of the bear:

- (6) (a) The bear is patting the lion and the lion is patting the monkey  
(b) The lion which is patting the bear is patting the monkey  
(c) The monkey is patting the lion and the lion is patting the bear  
(d) The monkey is patting the lion and the bear is patting the lion

On the other hand, the following responses to the sentence in (5) are entered in the error analysis:

- (7) (a) The bear is patting the lion, and the monkey is patting the bear  
(b) The bear is patting the monkey and the lion is patting the bear  
(c) The lion is patting the bear and the monkey is patting the bear

In 7a and 7b the function SO or OS (see below) is given to the relativized noun 'the bear' instead of the correct function SS. In 7c the function OO is erroneously attributed to the bear.

The second point about this error analysis has to do with the functions SO and OS. These cannot be distinguished from each other in the wrong answers of the participants, as in sentences 7a and 7b above. This is so because all the participants were asked to do was to point out the agent of an action, without saying anything. The answer in 7a can be interpreted as SO or as OS, and the same can be said of

---

<sup>2</sup>A noun is considered as relativized when a subject points at it twice. For example, in interpreting the sentence "The bear is hitting the monkey which is patting the lion," the participant will point at the bear, then at the monkey [meaning 'the bear is doing something to the monkey'], and then again at the monkey, and at the lion [meaning 'the monkey is doing something to the lion']. Participants were told to always indicate one action by two taps on the picture sheet.

sentence 7b. Since both interpretations are possible, I will not distinguish between the two functions in the error analysis. Finally, a corollary of this SO/OS confusion is that we cannot look at the SVO and OVS word orders separately in the error analysis, since these too are left to the experimenter's arbitrary choice.

The results of the error analysis on the relativization task are given in table 4.

Table 4: Error analysis of wrongly assigned functions to the relativized noun.

	SS	OS/SO	OO
Experimental group	26.4	49.4	24.1
Control group	8.7	70.8	20.4

The experimental group turned 26.4% of its wrong answers into SS, which confirms its preference for SS interpretations. This preference for the SS function might be due to a strategy of picking out the first noun in a string as agent. This was observed in chapter 4 when we dealt with cue validity, and where it was shown that the experimental group had a higher tendency than the control group to select the first noun as agent in a string of two nouns and a verb.

Unfortunately, not much can be said about the OS and SO configurations, since these, as said above, cannot be disentangled in the error analysis. All that can be said is that the control group shows a higher bias towards either or both of these configurations. Finally, the two groups showed a similar bias towards the OO configuration.

To conclude this section, we report on the results of a similar experiment on MA relative clauses in Bos and Verhoeven (1994). The results of their experiment on 10 year-old Moroccan children indicate the same order of difficulty of head-noun functions in the SVO word order as the one we found for the experimental group, namely, from easy to difficult, SS > OS > OO > SO (see table 3 above). For the OVS-word order, they report a slightly different order of difficulty than the one we found, namely OS > OO > SS > SO. The data presented by Bos and Verhoeven (1994: 139-40) suggest that with age, the OVS/OO configuration might become as easy as OS, if not easier. In their study, 8-year-old children correctly identify OVS/OO configurations in about 18%, and OVS/OS in about 46% of the cases. This pattern becomes quite different at the age of 9, with 32% in OVS/OO and about 35% in OVS/OS. At the age of 10, the percentage of correct scores for OVS/OO becomes about 38% while that of OVS/OS is about 50%.

Finally, all one can state in this area of complex sentence processing is that the second generation adolescents show no signs of language attrition. The differences

that were found between the control group and the second generation group cannot be interpreted as showing any characteristics of language loss. In the section below we proceed to an analysis of production data in order to have a more complete understanding of the differences between the two groups.

#### **4. Production of relative clauses in MA**

The purpose of this analysis of production data is twofold. First, it might help clarify the results of the perception experiment, by shedding some light on the low scores of the two groups. Second, it might reveal some differences between the two groups in the type and frequency of relative clauses they produce.

Production data were elicited by means of the same narrative used in the production task in the phonological analysis in chapter 5 (Mayer's 1969 picture book). The narratives told by 10 participants who had the lowest proficiency score in MA are chosen here for an examination of complex sentences with relative clauses. For control data, a total of ten narratives were chosen at random from the three regions where data was collected in Morocco.

The number of relative clauses produced within each subgroup was divided by the number of sentences within that group. A t-test analysis was applied to the means of the two groups in relative clauses, and revealed no significant difference ( $t=1.19$ ;  $p<.749$ ). This should come as no surprise considering the low number of relative clauses that were found, and which remains low compared to other languages. This is shown in table 5 (data from languages other than MA are adapted from Dasinger and Toupin 1994: 476).

Table 5: Relative clauses produced in the Frog Story narratives.

	9 years <sup>3</sup>		
	%Ss	M	n
English	50	2.0	13
German	67	1.5	11
Spanish	100	3.0	36
Hebrew	92	3.5	37
Turkish	40	2.0	8
MA	(13-17 years)		
Experimental group	30	.5	5
Control group	50	.8	8

%Ss Percentage of participants who produced at least one relative clause  
M Means of relative clauses  
n Number of relative clauses.

The low number of relative clauses in the production data might have to do with a possible preference of MA for conjoined sentences over complex sentences. This possibility has been pointed out for Arabic by Bar-Lev (1986) who claims that Arabic in general has a preference for conjoining clauses, rather than relativizing sentences. Although the claim was not made for MA, it remains a possibility that for MA also the conjoining strategy might be widely used. In this case, one can say that because MA does not make frequent use of relative clauses, its speakers are likely to be less familiar with this sentence construction, and hence will be expected to find relative clauses difficult to process.

The functions of relative clauses produced in each group were mostly those of naming new referents and those of reidentifying old referents. The first type is used mostly when participants do not know the name of an entity, and use a phrase to identify it, like 'that where the bees live' to identify the beehive. The latter type is most commonly used to indicate that something had already been identified before. An example of this function is the sentence 'and he broke the jar where his head was stuck', referring to the dog and the jar in which its head was stuck right at the beginning of the story.

---

<sup>3</sup>In their article, Dasinger and Toupin also give the figures for adult narrators. These were by far higher than those of the nine year olds which are given in this table.

The complete list of relative clauses produced in the two groups is given in tables 6 and 7, together with the function of the relativized nouns and the word order of the main clause and relative clause.

Table 6: Relative clauses produced by the control group

Function	Pattern	Sentences
<b>Reidentifying old referents:</b>	S/VO OO	<i>dik žžaža lli kanet fiha</i> that jar which she was in it "That jar in which (where) she was"
		<i>dda ggrana lli kan meHtaž fiha</i> he took the frog which he was needed in it "He took the frog which he needed"
		<i>taHt dik SSexra lli kan kayeeyyeT fuq menha</i> under that rock which he was calling above from it "He was hiding under the rock on top of which he was calling"
	SVO OS	<i>hezz lqerqra lli eezzet elih</i> he took the frog which she was dear on him "He took the frog which was dear to him"
<b>Identifying new referents</b>	SVO SS	<i>xaha lli naees quddamha šaf ggrana</i> her brother who sleeping next to her saw the frog "Her brother, who was sleeping next to her, saw the frog"
	SVO OS	<i>mša yšuf šenni mur dik ššežra lli naesa</i> went to see what behind that the tree which lying "He went to see what there was behind the tree which was lying (on the ground)"
	SVO OO	<i>yšuf f waHed ššežra dik fin kayskun l-yurab</i> he-see in a the tree that where he lives the crow "he saw in a tree that (thing) where the crow lives"

Four out of seven relative clauses produced in the control group serve the function of reidentifying old referents. The other three serve the purpose of naming new referents. The relative clauses attested in the narratives of the second generation group show a different pattern. Out of the five relatives produced in this group, three were used to serve the function of naming new referents, one was used to reidentify an old referent, and one was used for topic continuity.

Table 7: Relative clauses produced by the experimental group

Function	Pattern	Sentences
<b>Reidentifying old referents:</b>	VSO OO	<i>xša rasu f hadik fles fin kanet fi-ha</i> he struck his head in that bottle where she was in it "He stuck his head into the jar where she had been"
<b>Identifying new referents</b>	SV SO	<i>kanet waHed hadik lli fi-ha nneHlat</i> she was a that which in it the bees "There was that where the bees were"
	VS SS	<i>ža hadak lli ykun f lli</i> he came that which is in night "And that which is found at night (owl) came to him"
	SVO OO	<i>rekbu ela hadik ššežra lli mherrsa</i> they climbed on that tree which broken "They climbed on that tree which is broken"
<b>Topic continuity</b>	VS SS	<i>xuržet waHed lmuka lli TeyyHet lweld f lerD</i> it came out an the owl which dropped the boy in the floor "An owl came out, which dropped the boy on the floor"

Although the difference between the experimental group and the control group regarding the number of relative clauses was statistically not significant, a note is in order about the difference between these two groups regarding the type of functions of the relatives they produced. The difference between the two groups regarding reidentifying old referents might be due to the nature of the function itself on the one hand, and to the language command of the second generation group on the other. Reidentifying old referents in a narrative helps the listener to easily locate which entity the narrator is referring to. In the present narrative, however, there were not many cases where the listener would not know what the narrator was referring to: there was one boy, one dog, one jar, two trees, etc. Towards the end of the narrative more frogs show up, and some narrators felt the need to specify which frog the boy took. This function of reidentifying old referents might be considered a redundancy, the avoidance of which would spare the experimental group the trouble of building a relative clause. By redundancy here is not meant that some feature is not needed, but rather that a given feature can be absent from the narrative without crucially affecting the message. In explaining the low frequency of relative clauses with a reidentifying function in children's Frog Story narratives, Dasinger and Toupin (1994: 500) note that "the

REID [Reidentifying] function is both cognitively more demanding and pragmatically more sophisticated," which can also be the reason why only one relative clause with a reidentifying function was found in the experimental group.

The second generation group produced three relatives with the function of identifying new referents. It seems that the narrators from this group were forced to resort to a strategy to name or identify referents for which they could not find the proper names. Relative clause formation was one such strategy, since other ways of naming new referents can be used. Some of these were attested in the narratives, like the use of a superordinate noun to refer to a subordinate entity (use of *Hayawan* "animal" to refer to the gopher by one participant in the second generation group), or the use of a vague noun phrase *ši Haža* "something" to refer to an entity like the deer.

## 5. Conclusion

This chapter dealt with the perception and production of relative clauses in MA. The analysis of the results of a perception experiment showed the following. The experimental group and the control group did not differ significantly from each other in how they dealt with the overall task of relative clause processing. A statistically significant difference between the two groups was detected at the level of the interaction of group with type of head noun function (SS, SO, OS, OO), and at the level of group with word order (SVO/OVS) with function of relativized noun (SS/SO/OS/OO). The control group found the configuration SVO/OS the easiest of the eight configurations, whereas the experimental group found the configuration SVO/SS to be the easiest.

In general, the results of both groups were rather low, and could not be accounted for by any of the strategies proposed in the literature for relative clause processing. To have more insight into the issue of relative clause processing, and in order to highlight any other differences between the two groups, an analysis of production data was carried out based on ten narratives from each group. The low number and the simple structure of relative clauses produced in both groups were presented as a possible explanation for the low scores obtained in the perception experiment. A general observation was made about how the low number of relative clauses produced in each group might be due to a preference of MA in sentence construction for conjoining and juxtaposing over subordinating.

The results of both perception and production data show no clear indices of a language loss situation. In fact, at the perception level the mean correct scores of the experimental group turned out to be higher than those of the control group.

This relative superiority of the second generation group in this task was attributed to a possible difference in experience and test wiseness between the two groups.



### Conclusions

This concluding chapter has three goals. The first one is to sum up the findings of the present study. Second, it aims at answering the question posed at the beginning of this work, namely whether there is any language loss in the case of second generation Moroccan adolescents living in the Netherlands. The third goal is to put forth a number of limitations on the scope of this research, and, consequently, to recommend new avenues for investigating language loss of MA.

#### 1. Summary of results

The findings of the present study can be grouped under two major types: one would subsume phenomena that have a direct bearing on language shift, namely patterns of language use and language proficiency. The second one has to do with phenomena that have been identified at the linguistic and psycholinguistic levels of MA.

Chapter 2 dealt explicitly with the issue of language use and language proficiency. It was concluded that the Moroccan adolescents were found to use more Dutch than MA in their everyday interactions, especially in situations not including parents, such as in contacts with siblings and friends. Also, the proficiency of these adolescents was found to be higher in Dutch than in MA. This was mainly the case for those who were born in the Netherlands and/or those who spoke Dutch more frequently than MA.

Chapters 3 to 6 dealt with the linguistic and psycholinguistic aspects of MA. The findings of the analysis of plural formation in chapter 3 were quite revealing of a characteristic of language loss. In particular, evidence for a paradigmatic levelling affecting plural formation was found and discussed. The participants with the lowest proficiency scores in MA were found to resort to an overgeneralization of one plural formation strategy, while those who were relatively more proficient had access to a wider range of strategies.

Chapter 4 compared sentence processing strategies of the experimental group and the control group. The following linguistic cues: animacy of a noun, number agreement of a verb with its subject, word order, and noun stress were manipulated

in an cue validity experiment. One of the results of this experiment was that the control group relied on animacy in identifying the agent more than did the experimental group. This result was interpreted as an outcome of the influence of Dutch on MA. Another result was that within the control group participants with low proficiency in MA tended to rely more on Dutch-based strategies than participants with a higher proficiency level. Moreover, the experimental group as a whole was found to rely on a strategy of selecting the first noun as agent in a string of two nouns and a verb.

The phonology of MA was examined both at the level of perception and production in chapter 5. The results of an experiment on the perception of six phonological oppositions indicate that the second generation group and the Moroccan control group do not differ from each other significantly in perceiving these phonological oppositions. This was also the case with two oppositions that a Dutch control group found difficult to identify. At the level of production, however, it was possible to identify a number of characteristics of the second generation group, based on a narrative they told and a list of 25 items they were asked to translate from Dutch into MA. These characteristics were the following. The segments which participate in no phonological oppositions and/or which had a very limited distribution in Dutch (e.g. /q/, /š/ and /ž/) were substituted by other segments. In addition, a process of geminate reduction was found to be relatively widespread in the narratives of some participants. This process is related to another characteristic of second generation phonology, namely syllable structure reduction. It was concluded that these characteristics were due to the influence of the Dutch phonological system as well as to the markedness of the substituted segments and the altered syllables. The analysis of the narratives also revealed a frequent insertion of pauses, which resulted in a failure to resyllabify across word boundaries.

Chapter 6 investigated relative clause formation in MA. The results of an experiment on relative clause processing indicated that the two groups differed with respect to which configuration of word order and function of head noun was the easiest to interpret, i.e. the easiest to process. While both groups showed a clear preference for SVO over OVS word order, the experimental group found the configuration SVO/SS (where the head noun is subject in both the main clause and the relative clause) the easiest to interpret. The control group found the easiest configuration to be the SVO/OS (where the head noun is object in the main clause and subject in the relative clause). This difference was explained by reference to a general strategy of the experimental group to choose the first noun in a sentence as

agent, (as was found to be the case in chapter 4), while no conclusive explanation was found for the preference of the control group.

The results of the analysis of production data indicate that second generation adolescents differ from their peers in Morocco (the control group), in terms of frequency of relative clauses in their narratives. The experimental group was found to make less use of relative clauses than the control group, although the differences between the two groups were not statistically significant. This was interpreted as a possible avoidance of complex formations in MA on the part of the experimental group.

## **2. Is there any language loss in MA?**

In chapter 1 it was said that it is difficult, if not impossible, to distinguish between processes of language change and processes of language loss. The only viable distinction between the two can be found by taking the functions of language into consideration. In situations of 'healthy' language change, the language system continues to fulfill its functions by being used in the domains where it had always been used. A speaker or a community of speakers can change their habitual use of a language partly or wholly, i.e. in a few or all domains where this language was used as a norm, in which case we speak of language shift. This habitual use can extend to situations other than minority language situations, and can include second and foreign languages as well as mother tongues. In other words, 'healthy' language change processes can be indices of a language loss situation if the language is losing its functions.

In the case of Moroccan adolescents, we can say that there are indices of a language shift situation. A major reason for this is that Dutch was found to be used in some intimate domains together with, or even sometimes more frequently than MA. This encroaching of a dominant language into domains as intimate as the home, and in interactions involving siblings and friends has been found to be a crucial determinant of language shift (e.g. Fishman 1990). An immediate objection to this conclusion is that this might be a new language norm where both MA and Dutch are used, in which case it would be more reasonable to speak of a stable bilingual community. While there is nothing in our investigation that can categorically discard this possibility, a consideration of how transmissible MA can be for future generations of users might help explain why MA has less chances of maintenance than of shift.

If we think particularly of those participants who have a low proficiency in MA, it is hard to believe that they can transmit their native language to subsequent

generations. If they do, it will still be a reduced version of MA, as is the case of minority languages in similar situations (Gonzo and Saltarelli 1983). This need not be the case if these participants become more proficient in MA with age, although one is hard-pressed to find a reason why this would happen. We will come back to this issue in the last section of this chapter. We can only say here that transmitting a language in which one is not proficient seems a little odd, knowing that there is another language, in this case Dutch, in which such transmission would be much easier. Those who feel they are more proficient in Dutch than they are in MA might simply find it easier to speak Dutch to their children.

In addition to the factor of language transmission and language proficiency, there is also the distance between SA (Standard Arabic) and MA which acts against the maintenance of MA (El Aissati and de Bot 1994). This distance between SA and MA being quite large, to the extent of identifying them as two languages (see chapter 2), makes it hard to believe that conscious efforts to maintain language through schooling and spreading literature, such as newspapers and books, will be of substantial assistance. Furthermore, even in cases where languages have a large body of literature, it has been noted that minority languages are prone to shift. Thus, one can say that speakers of MA in the Netherlands will shift to Dutch since this is what happens to speakers of minority languages all over the world, as shown by various studies (e.g. Fishman 1966, Haugen 1969).

Another objection to the inevitability of language shift in minority language situations can rest on the famous case of diglossia. In such a case a high variety (H) of a language is used for formal purposes and a low one (L) is used for informal communication purposes, neither being threatened by the other one. The varieties in question can equally be different languages. Thus, one would ask, why wouldn't MA be used in informal situations and Dutch in more formal ones. However, we have already seen that Dutch is used in very intimate contexts and we know Dutch in the Netherlands is the official language used for all formal purposes. This excludes the possibility of there being a diglossic situation.

In fact, discussing diglossia in minority language situations is very similar to discussing the notion of compartmentalized and non-compartmentalized language use. In reviewing the causes of language shift in chapter 1, we mentioned that a fundamental condition for a minority language to survive shift is for it to have a compartmentalized use (Mougeon and Beniak 1991). What we said in the case of diglossia applies here too: it seems that there is no context where MA is used exclusively, except interactions involving parents. We have already said that the high frequency of MA use with parents might be due to a symbolic value of the

language, since using too much Dutch would indicate too much involvement in a society with very different values. This, of course, can be supplemented by the fact that parents' proficiency in Dutch is usually low, which is an additional constraint on communicating with them in Dutch. One can argue that both factors will have less of a role to play in the lives of second generation adolescents once they become parents themselves. That is, these will have grown up in Dutch society and would obviously have acquired a high command of Dutch.<sup>1</sup>

A final point supporting the conclusion that there is language shift from MA to Dutch has to do with institutional support. It is essential for minority groups to have institutional protection in order for their language and culture to remain relatively stable (e.g. Fishman 1980). In the case of MA in the Netherlands, we already saw in chapter 2 that it is not the language of instruction, the only domain where a conscious effort to maintain home language and culture can be observed.

Regarding the question of whether there is language attrition among MA native speakers, it was said at the outset of this investigation that we cannot speak of attrition in the sense of a negative change in linguistic behavior, given the design of the study. In order to overcome this difficulty we included a control group in the study. In this way it was possible to compare the linguistic behavior of the experimental group with that of a control group, the results of which are summed up above. The differences that were found between the two groups are what we termed characteristics of language loss.

We have already seen that there are no formal properties of these characteristics which would make them specific to language loss, as they obtain equally well in other language change situations. However, the changes we have defined differ from other natural language changes in the way they are propagated. In the case of second generation adolescents, one would ask why did the changes originate only in the language of those participants who have a low proficiency in MA? If we are talking about some process of language change independent of language loss, one would certainly expect these changes to operate independently of language proficiency, since every normal speaker in a speech community would be

---

<sup>1</sup>De Ruiter (1989) notes a certain semi-bilingualism of Moroccan children in his study. He comments on the fact that these children seem to have a full proficiency in neither MA (or Berber) nor Dutch. It is possible, however, that these children have a full command of a 'bilingual' grammar where both languages complement each other in a societal network (Di Luzio 1991). Thus, if asked to perform in one language, they will obviously be restrained from using their language command to the full. Another related issue is that if these children are asked to perform tasks for which they have learned no linguistic forms, i.e. which they haven't been performing ordinarily, the result would also show that they have a low proficiency in both languages.

assumed to have a normal language proficiency in his/her native language. In the present study, we have been referring constantly to participants with low proficiency for characteristics of language loss. In most cases, these participants were born and/or had spent most of their lives in the Netherlands. The other participants who did not show any strong deviations from the control group were those who spent less than half of their lives in this country. The obvious answer to the question of why participants with low proficiency are the locus of more changes than those with a higher proficiency has to do with language input. Simply stated, those who were born in the Netherlands were exposed less to MA than those who spent long periods of their lives in Morocco. Thus, we can say that while linguistic characteristics of language loss cannot be formally distinguished from other changes, their causes can be identified as different.

The answer to the question of whether there is any language attrition in the case of second generation adolescents is in the affirmative, bearing in mind our definition of language attrition as deviation from a norm, and as changes occurring in a situation of language shift, which generally characterize the speech of less proficient individuals. It remains to be seen whether participants in such situations actually do lose any features of their language, or simply proceed in their language acquisition at a slower pace than do their peers in the country of origin. In the latter case one can rather speak of language stagnation, as do Verhoeven and Boeschoten 1986, for example.

### **3. Avenues for future research**

The design of the study made it impossible to pursue a number of questions in depth. The study investigated a number of areas (language use and proficiency, phonology, morphology, and syntax), from different perspectives (linguistic, sociolinguistic, and psycholinguistic), and in most cases at the level of language perception and production. The multi-faceted nature of the investigation uncovered a number of issues that need more analysis at various levels of the grammar of MA. Virtually all of the areas investigated here require further study, and the experiments conducted here need elaboration and replication to verify the validity of their results and the conclusions that rest upon them.

Another point to take into consideration in future research is the period of time needed to observe signs of language loss. We have seen here that participants with a long history in the Netherlands were the ones who showed signs of language loss. Had we taken only participants who were born in the Netherlands, we would have had more chances of spotting characteristics of language loss.

There is need for research on language loss in the case of MA which would take a third generation of MA speakers and compare their language behavior to the one of second generation speakers which we have so far been able to identify. In this way, the researcher can have more assurance that the patterns of language behavior of second generation participants are genuine reflections of a language shift situation, and not patterns that can be reversed with age. That is, to say that we are dealing with a language shift situation where MA is abandoned in favor of Dutch, we need to know that adolescents will not change their behavior for some reason. This point was emphasized in a classic study by Gal (1979) on language shift from Hungarian to German in Austria. In order to be sure that young speakers of Hungarian and German, who were found to use German more than Hungarian, were actually initiating a language shift process, Gal compared the behavior of these youngsters to that of informants with a similar age from the past generation. She based her comparison mostly on historical evidence, and was able to identify crucial changes in the use of German and Hungarian, defining a situation of language shift from Hungarian to German. In our case, there is no past generation of Moroccan adolescents born in the Netherlands, since the history of Moroccan immigrants has only started in the beginning of the 1960's. At that time, Moroccan males usually immigrated without their families. The first generation of Moroccan immigrants grew up in Morocco, and as such cannot be a point of reference.





## References

- Aaliouli, M., and Wanroij, A. van. (1994). OETC in Nijmegen. Rapportage van een enquête. Unpublished report, SAD, Nijmegen.
- Aarts, R., Ruiter, J. J. de, and Verhoeven, L. (1993). *Tweetaligheid en schoolsucces. Relevantie en opbrengst van etnische groepstalen in het basisonderwijs*. Tilburg: Tilburg University Press.
- Abbassi, A. (1977). *A sociolinguistic analysis of multilingualism in Morocco*. Ph.D. dissertation, University of Texas at Austin. (University Microfilms International, Ann Arbor, Michigan.).
- Abdel-Aal, A. (1968). *Lahjat šamaal al-maʿrib: TiTwaan wa maa Hawlahaa* [The dialect of North Morocco: Tetouan and the surrounding area]. Cairo: Daar al-kaatib al-ʿarabii li-TTibaaʿah wa nnašr.
- Abdelmassih, E. (1973). *An introduction to Arabic*. Ann Arbor, Michigan: The University of Michigan.
- Abercrombie, D. (1969). *Elements of general phonetics*. Edinburgh: Edinburgh University Press.
- Abu-Haidar, F. (1990). Maintenance and shift in the Christian Arabic of Baghdad. *Zeitschrift für Arabische Linguistik*, 24, 47-62.
- Abu-Absi, S. (1986). The modernization of Arabic: Problems and prospects. *Anthropological Linguistics*, 28, 337-348.
- Adam, A. (1973). Berber migrants in Casablanca. In E. Gellner and C. Micaud (Eds.) (pp. 325-323).
- Aissati, A. El (1989). *A study of the phonotactics of Asht Touzine Tarifit*. Unpublished MA thesis. Faculty of Letters, Rabat.
- Aissati, A. El. (1993). Berber in Morocco and Algeria: Revival or decay? *AILA Review*, 10, 88-109.
- Aissati, A. El, and K. de Bot (1994). Moroccan Arabic in the Netherlands: Acquisition and loss. *Indian Journal of Applied Linguistics*, 20, 1&2, 177-192.
- Ammerlaan, T. (1996). "You get a bit wobbly..." Exploring bilingual lexical retrieval processes in the context of first language attrition. Ph.D. dissertation, University of Nijmegen.
- Andersen, R. (1982). Determining the linguistic attributes of language attrition. In R. Lambert and B. Freed (Eds.) (pp. 83-118).

- Andersen, R. (Ed.) (1983). *Pidginization and creolization as language acquisition*. Rowley, Mass.: Newbury House Publishers.
- Assad, M. (1978). *Le Parler arabe de Tanger*. Ph.D. dissertation, University of Gothenburg, Sweden.
- Bakel, J. van. (1973). *Fonologie van het Nederlands: Synchroon en diachroon*. Nijmegen: Author.
- Bar-Lev, Z. (1986). Discourse theory and "contrastive rhetoric." *Discourse Processes*, 9, 235-246.
- Bates, E., and MacWhinney, B. (1981). Second language acquisition from a functionalist perspective: Pragmatic, semantic and perceptual strategies. In H. Winitz (Ed.) (pp. 190-214).
- Bates, E., and MacWhinney, B. (1982). Functionalist approaches to grammar. In E. Wanner and L. Gleitman (Eds.) (pp. 173-218).
- Bates, E., and MacWhinney, B. (1989). Functionalism and the Competition Model. In B. MacWhinney and E. Bates (Eds.) (pp. 3-73).
- Belletti, A., Brandi, L., and Rizzi, L. (Eds.). (1981). *Theory of markedness in generative grammar*. Pisa: Scuola normale de Pisa.
- Benhallam, A. (1990). Native speakers' intuitions about Moroccan Arabic stress. In J. Pleines (Ed.) (pp. 91-110).
- Benkaddour, A. (1982). *A non-linear analysis of some aspects of the phonology and non-concatenative morphology of Arabic*. Ph.D. dissertation, School of Oriental and African Studies, London.
- Benkaddour, A. (1990). Semi-vowels and high vowels in Moroccan Arabic: A non linear approach. In J. Pleines (Ed.) (pp. 127-143).
- Berg-Eldering, L. van den. (1988). *Opvoeden in verandering: Aanzet tot een inter-culturele pedagogiek*. Unpublished manuscript. University of Leiden.
- Berman, R., and Slobin, D. (Eds.). (1994). *Relating Events in a Narrative*. Hillsdale, N.J.: Lawrence Erlbaum.
- Bhatia, T. K. (1982). Trinidad Hindi: Three generations of a transplanted variety. *Studies in the Linguistic Sciences*, 11, 135-150.
- Boogert, N. van den, and Stroomer, H. (1993). De Berberse literaire en orale traditie van de Sous (Zuid-Marokko). *Sharqiyyât*, 5, 55-77.
- Booij, G. (1995). *The phonology of Dutch*. Oxford: Clarendon Press.
- Bos, P., and Verhoeven, L. (1994). Moroccan-Arabic Dutch bilingual development. *Indian Journal of Applied Linguistics*, 20, 1&2, 120-150.

- Bot, K. de, and Clyne, M. (1994). A 16-year longitudinal study of language attrition in Dutch immigrants in Australia. Paper presented at the second International Conference on Maintenance and loss of minority languages, Noordwijkerhout (The Netherlands).
- Bot, K. de, and Montfort, R. van. (1988). Cue-validity in het Nederlands als eerste en tweede taal. *Tijdschrift voor Taal- en Tekstwetenschap*, 8, 2, 111-120.
- Bot, K. de, and Weltens, B. (1984). Taalverlies: Beschrijven versus verklaren. *Handelingen van het acht en dertigste Nederlands filologencongres, (april 1984)*, 51-61. Amsterdam & Maarsen: APA-Holland Universiteits Pers.
- Bot, K. de, and Weltens, B. (1991). Recapitulation, regression and language loss. In H. Seliger and R. Vago (Eds.) (pp. 31-52).
- Boukous, A. (1992). Quelques remarques sur la situation linguistique du Tamazight au Maroc. *Sharqiyyât*, 4, 1, 41-47.
- Broeder, P., Extra, G., Habraken, M., Hout, R. van, and Keurentjes, H. (1993). *Taalgebruik als indicator van etniciteit. Een studie naar identificatie van allochtone leerlingen*. Tilburg: Tilburg University Press.
- Brown, H. (1971). Children's comprehension of relativized English sentences. *Child Development*, 42, 1923-26.
- Bull, B. (1991). *The non-linear phonological structure of Moroccan Colloquial Arabic*. Ph.D. dissertation, University College London.
- Campbell, L., and Muntzel, C. (1989). The structural consequences of language death. In N. Dorian (Ed.) (pp. 181-196).
- Carabaza, E., and Santos, M. de. (1992). *Melilla y Ceuta. Las últimas colonias*. Madrid: Talasa Ediciones.
- Caubet, D. (1993). *L'arabe marocain*. Paris/Louvin: Peeters.
- Centraal Bureau voor de Statistiek. (1994). *Statistisch jaarboek*. The Hague: Staatsuitgeverij.
- Centraal Bureau voor de Statistiek. (1995). *Statistisch jaarboek*. The Hague: Staatsuitgeverij.
- Chafik, M. (1989). *Al-muejamu l-ʿarabiyyu l-amaazii-ʿiyyu* [An Arabic-Berber lexicon]. Rabat: Academy of the kingdom of Morocco.
- Chomsky, C. (1969). *The acquisition of syntax in children from five to ten*. Cambridge, Mass.: MIT Press.
- Clancy, M., Lee, H., and Zoh, M-H. (1986). Processing strategies in the acquisition of relative clauses: Universal principles and language specific realizations. *Cognition*, 24, 225-262.

- Clark, H., and Clark, E. (1977). *Psychology and language*. New York: Harcourt Brace.
- Clark, J. (1982). Measurement considerations in language attrition research. In R. Lambert and B.F. Freed (Eds.) (pp. 138-152).
- Clyne, M. (1977). Nieuw Hollands or double Dutch. *Dutch Studies*, 3, 1-30.
- Clyne, M. (1991). *Community languages. The Australian experience*. Cambridge: Cambridge University Press.
- Crystal, D. (1982). *A first dictionary of linguistics and phonetics*. London: André Deutsch.
- Dasinger, L., and Toupin, C. (1994). The development of relative clause functions in narrative. In R. Berman and D. Slobin (Eds.) (pp. 457-514).
- Dorian, N. (1978). The fate of morphological complexity in language death: Evidence from East Sutherland Gaelic. *Language*, 54, 590-609.
- Dorian, N. (1981). *Language death: The life cycle of a Scottish Gaelic dialect*. Philadelphia: University of Pennsylvania Press.
- Dorian, N. (1982). Language loss and maintenance in language contact situations. In R. Lambert and B. Freed (Eds.) (pp. 44-59).
- Dorian, N. (Ed.) (1989). *Investigating obsolescence: Studies in language contraction and death*. Cambridge: Cambridge University Press.
- Driessen, G. (1990). *Onderwijspositie van allochtone leerlingen. De rol van sociaaleconomische en etnisch-culturele factoren met speciale aandacht voor het Onderwijs in Eigen Taal en Cultuur*. Nijmegen: ITS.
- Els, T. van, and Weltens, B. (1989). Foreign language loss research from a European point of view. *ITL Review of Applied Linguistics*, 83/84, 19-35.
- Ennaji, M. (1985). *Contrastive Syntax*. Würzburg: Königshausen & Neumann.
- Extra, G., and Ruiter, J.J. de. (1994). The sociolinguistic status of the Moroccan community in the Netherlands. *Indian Journal of Applied Linguistics*, 20, 1&2, 151-176.
- Extra, G., and Verhoeven. L. (1993). A bilingual perspective on Turkish and Moroccan children and adults in the Netherlands. In G. Extra and L. Verhoeven (Eds.) (pp. 67-100).
- Extra, G., and Verhoeven, L. (Eds.). (1993). *Immigrant languages in Europe*. Clevedon: Multilingual Matters.
- Fase, W., Jaspaert, K., and Kroon, S. (Eds.). (1992). *Maintenance and loss of minority languages*. Amsterdam: John Benjamins.
- Ferguson, C. (1959). Diglossia. *Word*, 15, 325-340.

- Ferguson, C., and Slobin. D. (Eds.) (1973). *studies of child language development*. New York: Holt, Rinehart, and Winston.
- Fishman, J. (Ed.) (1966). *Language loyalty in the United States*. The Hague: Mouton.
- Fishman, J. (1980). Bilingualism and biculturalism as individual and societal phenomena. *Journal of Multilingual and Multicultural Development*, 1, 3-17.
- Fishman, J. (1990). What is reversing language shift (RLS) and how can it succeed? *Journal of Multilingual and Multicultural Development*, 11, 5-36.
- Freed, B. (1982). Language loss: Current thoughts and future directions. In R. Lambert and B. Freed (Eds.) (pp. 1-5).
- Gal, S. (1979). *Language shift: Social determinants of linguistic change in bilingual Austria*. New York: Academic Press.
- Gal, S. (1984). Phonological style in bilingualism: The interaction of structure and use. In D. Schiffrin (Ed.) (pp. 290-302).
- Gal, S. (1989). Lexical innovation and loss: The use and value of restricted Hungarian. In N. Dorian (Ed.) (pp. 313-331).
- Gallagher, C. (1963). *The United States and North Africa*. Cambridge, Mass.: Harvard University Press.
- Gardner R. (1982). Social factors in language retention. In R. Lambert and B. Freed (Eds.) (pp. 25-43).
- Gardner, R., Moorcroft R., and Metford, J. (1989). Second language learning in an immersion programme: Factors influencing acquisition and retention. *Journal of Language and Social Psychology* 8, 5, 287-305.
- Gellner, C., and Micaud, E. (1973). (Eds.) *Arabs and Berbers*. London: Duckworth.
- Gonzo, S., and Saltarelli, M. (1983). Pidginization and linguistic change in emigrant languages. In R. Andersen (Ed.) (pp. 181-97).
- Gravel, L-A. (1979). *A sociolinguistic investigation of multilingualism in Morocco*. Ph.D. dissertation, Columbia University, New York. (University Microfilms International, Ann Arbor, Michigan.).
- Hakuta, K. (1981). Grammatical description versus configurational arrangement in language acquisition: The case of relative clauses in Japanese. *Cognition*, 9, 197-236.
- Harrell, R. (1962). *A short reference grammar of Moroccan Arabic*. Washington: Georgetown University Press.
- Haugen, E. (1956). *Bilingualism in the Americas. A bibliography and research guide*. Alabama: University of Alabama Press.

- Haugen, E. (1969). *The Norwegian language in America. A study in bilingual behavior*. Bloomington: Indiana University Press.
- Heath, J. (1989). *From code-switching to borrowing: Foreign and diglossic mixing in Moroccan Arabic* (Library of Arabic Linguistics, Monograph No.9). London: Kegan Paul International.
- Heisterkamp-Wormer, M. (1985). *De rol van woordvolgorde, animacy, agreement, and accentuering bij het interpreteren van Nederlandse zinnen*. Master's thesis, Department of Applied Linguistics, University of Nijmegen.
- Hinskens, F. (1993). *Dialect levelling in Limburg. Structural and sociolinguistic aspects*. Ph.D. dissertation, University of Nijmegen.
- Hymes, D. (Ed.) (1971). *Pidginization and creolization of languages*. Cambridge: Cambridge University Press.
- Jaspaert, K., and Kroon, S. (1989). Social determinants of language loss. *ITL Review of Applied Linguistics*, 83/84, 75-98.
- Jaspaert, K., Kroon, S., and Hout, R. van. (1986). Points of reference in first language loss research. In B. Weltens, K. de Bot and T. van Els (Eds.) (pp. 37-49).
- Kail, M. (1989). Cue validity, cue cost and processing types in sentence comprehension in French and Spanish. In B. MacWhinney and E. Bates (Eds.) (pp. 77-117).
- Kaufman, D., and Aronoff, M. (1991). Morphological disintegration and reconstruction in first language attrition. In H. Seliger and R. Vago (Eds.) (pp. 175-188).
- Kaye, A. (1994). Formal vs. informal in Arabic: Diglossia, triglossia, tetraglossia, etc. Polyglossia-Multiglossia viewed as a continuum. *Zeitschrift für Arabische Linguistik*, 20, 47-66.
- Kaye, J., and Lowenstamm, J. (1981). Syllable structure and markedness theory. In A. Belletti, L. Brandi and L. Rizzi (Eds.) (pp. 287-315).
- Keenan, E. (1985). Relative clauses. In T. Shopen (Ed.) (pp. 141-70).
- Keenan, E., and Comrie, B. (1977). NP accessibility and universal grammar. *Linguistic Inquiry*, 8, 63-100.
- Kenstowicz, M. (1994). *Phonology in generative grammar*. Cambridge: Blackwell
- Kilborn, K., and Cooreman, A. (1987). Sentence interpretation strategies in adult Dutch-English bilinguals. *Applied Psycholinguistics*, 8, 415-431
- Koster, J. (1975). Dutch as an SOV language. *Linguistic Analysis* 1/2, 111-136.
- Krumbacher, K. von. (1902) *Das Problem der neugriechischen Schriftsprache*. Munich: Roth.

- Lambert, R. (1982). Setting the agenda. In R. Lambert and B. Freed (Eds.) (pp. 6-10).
- Lambert, R. (1989). Language attrition. *ITL Review of Applied Linguistics*, 83/84, 1-18.
- Lambert, R., and Freed, B. (Eds.). (1982). *The loss of language skills*. Rowley, Mass.: Newbury House.
- Levelt, W. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.
- Liu, H., Bates, E., and Li, P. (1992). Sentence interpretation in bilingual speakers of English and Chinese. *Applied Psycholinguistics*, 13, 451-484.
- Luzio, A. di. (1991). On some (socio)linguistic properties of Italian foreign workers' children in contact with German. *International Journal of the Sociology of Language*, 90, 131-157.
- MacWhinney, B., Bates, E., and Kleigl, S. (1984). Cue-validity and sentence interpretation in English, German, and Italian. *Journal of Verbal Learning and Verbal Behavior*, 23, 127-150.
- MacWhinney, B., and Bates, E. (Eds.). (1989). *The cross-linguistic study of sentence processing*. New York: Cambridge University Press.
- Maher, J., (1991). A crosslinguistic study of language contact and language attrition. In H. Seliger and R. Vago (Eds.) (pp. 67-84).
- Manessy, G. (1977). Processes of pidginization in African languages. In A. Valdman (Ed.) (pp. 132-137).
- Marçais, P. (1977). *Esquisse grammaticale de l'arabe maghrébin*. Paris: Librairie d'Amérique et d'Orient.
- Marçais, W. (1930). La diglossie arabe. *L'enseignement public*, 97, 401-409.
- Mayer, M. (1969). *Frog: Where Are You?* New York: Dial Books for Young Readers.
- McDonald, J. (1986). The development of sentence comprehension strategies in English and Dutch. *Journal of Experimental Child Psychology*, 41, 317-335.
- McDonald, J. (1987). Sentence interpretation in bilingual speakers of English and Dutch. *Applied Psycholinguistics*, 8, 379-413.
- Medlaoui, M. El. (1985). Le parler berbère chleuh d'Imdlawn: segments et syllabation. Master's thesis, Université de Paris VIII.
- Mee, G. van der. (1989). Analfabetisme toegenomen. *Het Schoolblad*, 17/5, p.37.
- Meer, P. van der. (1984). *Omgaan met Marokkanen*. Deventer: Van Loghum Slaterus.

- Miyawaki, H. (1992). Some problems of linguistic minorities in Japan. In W. Fase, K. Jaspaert and S. Kroon (Eds.) (pp. 357-367).
- Montfort, R. van. (1986). Het REMAR-2 experiment. Een onderzoek naar cue-validity bij vreemdetaalsprekers. Master's thesis, University of Nijmegen.
- Montfort, R., van and Diederens, M. (1986). Cue-validity in het Nederlands en in het Engels als vreemde taal. Master's thesis, University of Nijmegen.
- Mougeon, R., and Beniak, E. (1991). *Linguistic consequences of language contact and restriction* (Oxford Studies in Language Contact). Oxford: Clarendon Press.
- Münstermann, H., and Hagen, T. (1986). Functional and structural aspects of dialect loss. In B. Weltens, K. de Bot and T. van Els (Eds.) (pp. 75-96).
- Narain, G., and Verhoeven, L. (1993). *Ontwikkeling van tweetaligheid bij allochtone kleuters*. Tilburg: KUB.
- Nortier, J. (1989). *Dutch and Moroccan Arabic in contact: Code-switching among Moroccans in the Netherlands*. Ph.D. dissertation, University of Amsterdam.
- Olshtain, E., and Barzilay, M. (1991). Lexical retrieval difficulties in adult language attrition. In H. Seliger and R. Vago (Eds.) (pp. 139-150).
- Otten, R., and Ruiter, J. J. de. (1991). De Marokkanen. In J. J. de Ruiter (Ed.) (pp. 91-126).
- Oxford, R. (1982). Technical issues in designing and conducting research on language skill attrition. In R. D. Lambert and B. F. Freed (Eds.) (pp. 19-137).
- Pels, T. (1991). *Marokkaanse kleuters en hun culturele kapitaal. Opvoeden en het leren in het gezin en op school*. Amsterdam/Lisse: Swets & Zeitlinger.
- Pleines, J. (Ed.) (1990). *Maghreb linguistics*. Rabat: Editions Okad.
- Pulte, W. (1971). *An outline of the development of Dutch phonology*. Ph.D. dissertation, University of Texas at Austin.
- Read, C., Kraak, R., and Boves, L. (1979). The interpretation of ambiguous who-questions in Dutch: The effect of intonation. In W. Zonneveld and F. Weerman (Eds.) (pp. 389-410).
- Reygasse, M. (1932). *Contribution à l'étude des gravures rupestres et inscriptions Tifinar' du Sahara Central*. Alger: Imprimerie Jules Carbonel.
- Roelandt, T., Roijen, J., and Veenman, J. (1992). *Minderheden in Nederland. Statistisch Vademecum*. The Hague: Staatsuitgeverij.
- Roelandt, T., and Verweij, A. (1991). *Kerngegevens Minderhedenbeleid 1990*. The Hague: Ministerie van Binnenlandse Zaken.
- Romaine, S. (1989). *Bilingualism*. Oxford: Basil Blackwell.



- Rouchdy, A. (1989). "Persistence" or "tip" in Egyptian Nubian. In N. Dorian (Ed.) (pp.91-102).
- Ruiter, J. J. de. (1989). *Young Moroccans in the Netherlands: An integral approach to their language situation and acquisition of Dutch*. Ph.D.dissertation, University of Utrecht.
- Ruiter, J.J. de. (Ed.) (1991). *Talen in Nederland*. Groningen: Wolters-Noordhoff.
- Samarin, W. (1971). Salient and substantive pidginization. In D. Hymes (Ed.)(pp. 117-140).
- Sankoff, G. (1980). *The social life of language*. Philadelphia: University of Pennsylvania Press.
- Schaufeli, A. (1995). Word Order in a Turkish-Dutch contact situation. Paper read at the Symposium on Language Loss and Public Policy. University of New Mexico, Albuquerque (June 30-July 2, 1995).
- Schiffrin, D. (Ed.) (1984). *Meaning, form and use in context: Linguistic applications*. Washington, DC: Georgetown University Press.
- Schils, E. (1996). A nominal-level concentration measure. Unpublished manuscript. University of Nijmegen.
- Schmidt, A. (1991). Language attrition in Boumaa Fijian and Dyirbal. In H. Seliger and R. Vago (Eds.) (pp. 113-124).
- Schutter, G. de. (1974). *De Nederlandse zin*. Brugge: de Tempel.
- Seliger, H., and Vago, R. (1991). The study of language attrition: An overview. In H. Seliger and R. Vago (Eds.) (pp. 3-15).
- Seliger, H., and Vago, R. (Eds.) (1991). *First language attrition*. Cambridge: Cambridge University Press.
- Seliger, H. (1985). Primary language attrition in the context of other language loss and mixing. Manuscript. Department of Linguistics, City University of New York.
- Sheldon, A. (1974). The role of parallel function in the acquisition of relative clauses in English. *Journal of Verbal Learning and Verbal Behavior*, 13, 272-281.
- Shopen, T. (Ed.) (1985). *Language typology and syntactic description*. Cambridge: Cambridge University Press.
- Slobin, D. (1973). Cognitive prerequisites for the development of grammar. In C. Ferguson and D. Slobin (Eds.) (pp. 175-208).
- Smith, M. (1974). Relative clause formation between 29-36 months: A preliminary report. *Papers and Reports on Child Language Development*, 8, 104-110.
- Soesman, A. (1993). Attrition of native vocabulary in Dutch adult immigrants to

- Israel. Master's thesis, Tel Aviv University.
- Swadesh, M. (1948). Sociolinguistic notes on obsolescent languages. *International Journal of American Linguistics*, 14, 226-235.
- Taman, H. (1993). The utilization of syntactic, semantic, and pragmatic cues in the assignment of subject role in Arabic. *Applied Psycholinguistics*, 14, 299-317.
- Thomason, S., and Kaufman, T. (1991). *Language contact, creolization and genetic linguistics*. Berkeley: University of California Press.
- Tosi, A. (1984). *Immigration and bilingual education*. Oxford: Pergamon.
- Trudgill, P. (1983). *On dialect*. Oxford: Basil Blackwell.
- Valdman, A. (Ed.) (1977). *Pidgin and creole linguistics*. Bloomington: Indiana University Press.
- Veltman, C. (1983). *Language shift in the United States*. New York: Mouton.
- Verhoeven, L., and Boeschoten, H. (1986). First language acquisition in a second language submersion environment. *Applied Psycholinguistics*, 7, 241-256.
- Verhoeven, L., Extra, G., Konak, O., Narain, G., and Zerrouk, R. (1990). *Tweetaligheid bij allochtone kleuters*. Tilburg: Tilburg University Press.
- Versteegh, K. (1984). *Pidginization and creolization: The case of Arabic*. (Current Issues in Linguistic Theory 33). Amsterdam & Philadelphia: John Benjamins.
- Vries, J. de. (1992). Language maintenance and shift: Problems of measurement. In W. Fase, K. Jaspaert and S. Kroon (Eds.) (pp. 357-367).
- Wanner, E., and Gleitman, L. (Eds.) (1982). *Language acquisition: The state of the art*. New York: Cambridge University Press.
- Weinreich, U. (1966 [1953]) *Languages in contact: Findings and problems*. The Hague: Mouton.
- Weltens, B. (1987). *The attrition of French as a foreign language*. Dordrecht: Foris Publications.
- Weltens, B., Bot, K. de, and Els, T. van. (Eds.) (1986). *Language attrition in progress*. Dordrecht: Foris Publications.
- Winitz, H. (Ed.) (1981). *Native and foreign language acquisition*. New York: New York Academy of Sciences.
- Youssi, A. (1992). *Grammaire et lexique de l'arabe marocain moderne*. Casablanca: Wallada.
- Zonneveld, W., and Weerman, F. (Eds.) (1979). *Linguistics in the Netherlands 1977-1979*. Dordrecht: Foris Publications.

# Appendix 1

## A. Questionnaire of language proficiency in Dutch and in MA (Questions asked in Dutch).

### VRAGENLIJST Taalvaardigheid Nederlands en Marokkaans Arabisch

#### SPREKEN (Speaking items)

(Give simple information about self (e.g. place of birth))

1. Kun je eenvoudige informatie over jezelf geven in het Marokkaans Arabisch/Nederlands, bijvoorbeeld vertellen waar en wanneer je geboren bent?

(Buy clothes)

2. Wanneer je kleren gaat kopen in Marokko/Nederland, kun je dan uitleggen wat je zoekt en vragen naar bijvoorbeeld maten?

(Tell a visitor directions)

3. Wanneer iemand op straat in Marokko/Nederland je de weg vraagt kun je dat dan uitleggen?

(Introduce oneself)

4. Wanneer je in Marokko/Nederland bij iemand op bezoek komt en daar zijn anderen die je nog niet kent, kun je jezelf dan voorstellen?

(Ask directions)

5. Kun je in Marokko/Nederland de weg vragen?

(Explain why late)

6. Wanneer je in Marokko/Nederland te laat komt op een afspraak, kun je dan uitleggen hoe dat komt?

(Tell about future)

7. Kun je aan een Marokkaanse/Nederlandse kennis vertellen wat je van plan bent in de toekomst te gaan doen?

(Tell a friend about something funny)

8. Wanneer je iets grappigs heeft meegemaakt, kun je dat dan aan een Marokkaanse/Nederlandse vriend of vriendin vertellen?

(Tell someone about present job, etc. in detail)

9. Kun je aan een Marokkaan/Nederlander precies uitleggen, tot in detail, wat je bijvoorbeeld in de natuurkundelessen op school doet?

(Talk about hobby)

10. Kun je aan een Marokkaanse/Nederlandse kennis vertellen wat je voor hobby's hebt of wat je in je vrije tijd doet?

(Tell how Prime Minister is chosen)

11. Kun je aan een Marokkaan/Nederlander uitleggen hoe in Nederland/Marokko de minister-president gekozen wordt? (Ga er vanuit dat je weet hoe dat gaat)

(Debate controversial topic)

12. Kun je met een Marokkaanse/Nederlandse kennis discussiëren over bijvoorbeeld cultuurverschillen tussen Nederlanders en Marokkanen?

### **LUISTEREN (Understanding items)**

(Face-to-face conversation slowly and carefully)

1. Wanneer je praat met een Marokkaan/Nederlander die langzaam en duidelijk probeert te praten, kun je dat dan volgen?

(Announcements)

2. Wanneer er op school iets omgeroepen wordt door een luidspreker, kun je dat verstaan? Bijvoorbeeld een boodschap dat er een leraar ziek is of dat een les niet doorgaat.

(Telephone slowly and carefully)

3. Wanneer je een Marokkaan/Nederlander aan de telefoon hebt die langzaam en duidelijk probeert te praten, kun je dat dan begrijpen?

(Radio play-by-play descriptions of sports events)

4. Kun je op de Marokkaanse/Nederlandse radio een kort verslag van bijvoorbeeld een basketbal wedstrijd begrijpen?

(Radio news broadcasts)

5. Kun je de nieuwsberichten op de Marokkaanse/Nederlandse radio volgen?

(Movies without subtitles)

6. Kun je een speelfilm (bijvoorbeeld James Bond) waarin Marokkaans Arabisch/Nederlands gesproken wordt, volgen? (Dus zonder ondertiteling)

(Face-to-face quickly and colloquially)

7. Kun je een Marokkaan/Nederlander die gewoon vlot tegen je praat begrijpen?

(Telephone quickly and colloquially)

8. Kun je in een telefoon gesprek een Marokkaan/Nederlander die gewoon vlot tegen je praat begrijpen?

(Two native speakers)

9. Kun je twee Marokkanen/Nederlanders die met elkaar praten, volgen?

**LEZEN (Reading items)**

(Personal letters in simple language)

1. Kun je persoonlijke brieven (bijvoorbeeld van een vriend) die in eenvoudig Arabisch/Nederlands zijn geschreven lezen?

(Newspaper headlines)

2. Kun je de krantekoppen in een Arabische/Nederlandse krant lezen?

(Newspaper 'want ads')

3. Kun je advertenties in een Arabische/Nederlandse krant, bijvoorbeeld 'Te koop aangeboden/gevraagd' begrijpen? (denk aan alle afkortingen)

(Personal letters as to a native speaker)

4. Kun je een persoonlijke brief die een Marokkaan/Nederlander aan een andere Marokkaan/Nederlander heeft geschreven, lezen?

(Popular novels)

5. Kun je dingen lezen als een geïllustreerd stripverhaal of een detective?

(Magazine articles (Time, etc.))

6. Kun je een artikel lezen in een tijdschrift in het Nederlands of in het Arabisch?

(Technical material in a professional field)

7. Kun je een stuk lezen in het Arabisch/Nederlands dat gaat over een specialistisch onderwerp, bijvoorbeeld over de werking van een nieuw soort benzinemotor?

**SCHRIJVEN (Writing items)**

(Introduce oneself)

1. Kun je voor jezelf een korte aantekening maken in het Arabisch/Nederlands, bijvoorbeeld dat je iemand moet bellen?

(Shopping list)

2. Kun je een boodschappenlijst maken in het Nederlands/Arabisch?

(Letter to a friend)

3. Kun je een brief schrijven in het Arabisch/Nederlands?

(Advertisement)

4. Kun je een advertentie opstellen, waarin je bijvoorbeeld een auto te koop aanbiedt voor in een Arabische/Nederlandse krant?

(Dictation)

5. Kun je op school in het Arabisch/Nederlands opschrijven wat de lerares je voor zegt?  
(Dus een dictee maken)

(Job application)

6. Kun je een sollicitatiebrief schrijven in het Arabisch/Nederlands?

**B. Can-do scale**

Naam: .....

Groep:

- 1 = lukt niet (Not possible)  
2 = gaat heel erg moeizaam  
3 = kost wat moeite  
4 = gaat aardig goed  
5 = geen enkel probleem (no problem at all)

	Arabisch	Nederlands
	<b>Spreken (Speaking)</b>	
1.	1 2 3 4 5	1 2 3 4 5
2.	1 2 3 4 5	1 2 3 4 5
3.	1 2 3 4 5	1 2 3 4 5
4.	1 2 3 4 5	1 2 3 4 5
5.	1 2 3 4 5	1 2 3 4 5
6.	1 2 3 4 5	1 2 3 4 5
7.	1 2 3 4 5	1 2 3 4 5
8.	1 2 3 4 5	1 2 3 4 5
9.	1 2 3 4 5	1 2 3 4 5
10.	1 2 3 4 5	1 2 3 4 5
11.	1 2 3 4 5	1 2 3 4 5
12.	1 2 3 4 5	1 2 3 4 5

**Luisteren (Listening)**

1.	1 2 3 4 5	1 2 3 4 5
2.	1 2 3 4 5	1 2 3 4 5
3.	1 2 3 4 5	1 2 3 4 5
4.	1 2 3 4 5	1 2 3 4 5
5.	1 2 3 4 5	1 2 3 4 5
6.	1 2 3 4 5	1 2 3 4 5
7.	1 2 3 4 5	1 2 3 4 5
8.	1 2 3 4 5	1 2 3 4 5
9.	1 2 3 4 5	1 2 3 4 5

**Lezen (Reading)**

- |    |           |           |
|----|-----------|-----------|
| 1. | 1 2 3 4 5 | 1 2 3 4 5 |
| 2. | 1 2 3 4 5 | 1 2 3 4 5 |
| 3. | 1 2 3 4 5 | 1 2 3 4 5 |
| 4. | 1 2 3 4 5 | 1 2 3 4 5 |
| 5. | 1 2 3 4 5 | 1 2 3 4 5 |
| 6. | 1 2 3 4 5 | 1 2 3 4 5 |
| 7. | 1 2 3 4 5 | 1 2 3 4 5 |

**Schrijven (Writing)**

- |    |           |           |
|----|-----------|-----------|
| 1. | 1 2 3 4 5 | 1 2 3 4 5 |
| 2. | 1 2 3 4 5 | 1 2 3 4 5 |
| 3. | 1 2 3 4 5 | 1 2 3 4 5 |
| 4. | 1 2 3 4 5 | 1 2 3 4 5 |
| 5. | 1 2 3 4 5 | 1 2 3 4 5 |
| 6. | 1 2 3 4 5 | 1 2 3 4 5 |

**C. Sociolinguistic profile**

(Note: Except for the English text in parentheses, this is the exact list given to subjects to fill out. The list was given in Dutch because it was felt that the subjects would have problems understanding Arabic text (see chapter 2).

**VRAGENLIJST Sociolinguïstisch profiel****ONDERWIJS (Level of education)**

1. Wat is je opleiding/ schoolverleden?

- ☐ basisschool .... jaar
- ☐ mavo/lbo ..... jaar
- ☐ anders .....

(Type of schooling in Arabic)

2. Wat voor lessen heb je in het Arabisch gevolgd?

- ☐ OETC (binnen schooluren)..... jaar
- ☐ OETC (buiten schooluren) ..... jaar
- ☐ Koranschool .....jaar
- ☐ anders.....

(Other languages spoken)

3. Ken je behalve Marokkaans Arabisch en Nederlands nog andere talen?

- ☐ nee
- ☐ ja, n.l.....
- een beetje/redelijk/goed

**GEZINSSITUATIE (Family situation)**

(Members of the family)

**4. Hoe ziet jullie gezin eruit?**

- 0 vader Marokkaan/Nederlands
- 0 moeder Marokkaan/Nederlands
- 0 ..... broer(s), leeftijden: .....
- 0 ..... zuster(s) leeftijden: .....
- 0 ..... andere familieleden, n.l.....

(languages used with father)

**5. Wat spreek je met je vader?**

- ..... % Nederlands
- ..... % Marokkaans Arabisch
- ..... % anders, n.l.

(languages used with mother)

**6. Wat spreek je met je moeder?**

- ..... % Nederlands
- ..... % Marokkaans Arabisch
- ..... % anders, n.l.

(Was this always the case?)

**7. Is dat altijd zo geweest?**

- 0 ja
- 0 nee, vroeger.....

(Languages used between parents)

**8. Wat spreken je ouders met elkaar?**

- .....% Marokkaans Arabisch
- .....% Nederlands
- .....% anders

(Languages used with siblings)

**9. Wat spreek je met je broers/zussen?**

- 0 de oudste broer/zus Marokkaans Arabisch/Nederlands
- 0 de volgende broer/zus Marokkaans Arabisch/Nederlands
- 0 de volgende broer/zus Marokkaans Arabisch/Nederlands
- 0.....
- 0 de jongste broer/zus Marokkaans Arabisch/Nederlands



(Languages used between parents and siblings)

10. Wat spreken je ouders met je broers en zussen?

.....% Marokkaans Arabisch

.....% Nederlands

### **SOCIALE CONTACTEN (Social contacts)**

(Family members in the Netherlands)

11. Hebben jullie Marokkaanse familieleden in Nederland?

0 nee

0 gehad, n.l. ....

0 ja, n.l. ....

Hebben jullie veel kontakt met ze?

0 nee, n.l. ....

0 ja, n.l. ....

Spreek je Marokkaans Arabisch met ze?

0 meestal wel

0 vaak

0 soms

(Contact of parents with friends and acquaintances)

12. Hebben je ouders vrienden/kennissen die ze regelmatig zien?

0 veel

0 een paar

0 weinig

(Origin of these acquaintances, Moroccan, Dutch, other)

13. Zijn het Marokkanen/Nederlanders/anders?

0 .....% Marokkanen

0 .....% Nederlanders

0 .....% anders

(Moroccan friends)

14. Heb je Marokkaanse vrienden/vriendinnen?

0 nee

0 ja, .....

(languages used with them)

15. Wat praat je met ze?

.....% Marokkaans Arabisch

.....% Nederlands

(Languages used with them at home)

16. Als je ze mee naar huis neemt, wat spreken jullie dan?

.....% Marokkaans Arabisch

.....% Nederlands

(Dutch friends)

17. Heb je Nederlandse/andere vrienden/vriendinnen?

0 nee

0 ja, .....

(Membership in associations/clubs)

18. Ben je lid van bepaalde verenigingen/clubs?

0 nee

0 ja, n.l.....

(Estimated total amount Dutch or MA are spoken)

19. Als je moet inschatten, over het geheel genomen, hoeveel procent van de tijd je Nederlands en hoeveel procent van de tijd je Marokkaans Arabisch spreekt, wat zegt je dan?

....% Nederlands

....% Marokkaans Arabisch

(Visits to Morocco)

20. Ga je wel eens naar Marokko?

0 nee, nooit.

0 af en toe, n.l.....

0 geregeld, n.l.....

(Visits alone, with family, etc.)

21. Ga je alleen?

0 ja

0 nee, met mijn familie

0 anders, n.l.....

(Length of stay)

22. Hoelang blijf je dan gemiddeld?

.....weken

(Place of stay)

23. Waar logeer je?

0 bij familie

0 in hotels/pensions

0 eigen huis

0 anders, n.l.....

**D. Subjects' self-ratings of their proficiency in reading and writing in Standard Arabic.**

(Note: The subjects were explicitly told that these questions, unlike the ones for speaking and listening comprehension, refer to their proficiency in Standard Arabic, the language they learn at school; for the questions, see appendix 1A above).

Participant	Writing		Reading	
	Arabic	Dutch	Arabic	Dutch
01	1.00	4.80	1.29	4.86
02	1.33	5.00	1.00	5.00
03	1.00	4.80	1.00	5.00
04	1.00	5.00	1.43	5.00
05	1.00	5.00	1.00	5.00
06	1.00	5.00	1.00	5.00
07	1.00	5.00	1.43	5.00
08	1.00	5.00	1.00	5.00
09	2.17	4.80	2.14	5.00
10	3.17	4.80	3.57	5.00
11	1.50	5.00	1.00	5.00
12	1.00	5.00	1.00	5.00
13	1.67	4.00	3.43	4.60
14	5.00	5.00	4.57	5.00
15	5.00	5.00	5.00	5.00
16	1.33	5.00	3.43	5.00
17	4.83	5.00	5.00	5.00
18	4.67	4.50	5.00	5.00
19	1.17	5.00	1.71	5.00
21	3.67	4.67	3.29	4.86
22	1.00	4.83	1.14	5.00
23	1.00	5.00	1.00	5.00
24	2.17	4.30	2.14	4.57
25	2.00	3.16	2.71	4.00
26	1.00	4.50	1.00	4.86
Mean:	2.0267	4.7664	2.2514	4.9100
SD.:	1.4471	0.4237	1.4687	0.2237

## Appendix 2

### Results of the plural test.

(Note: The asterisk indicates that there was more than one form given. The symbol '--' is used for cases where no answer was given. Column 1: participant number. The words in bold italics are the singular forms given as stimuli.)

#### A. Control group

	<i>qeTT</i>	<i>Huli</i>	<i>sbeε</i>	<i>kelb</i>	<i>εewd</i>	<i>qerd</i>
51	qTaT* mšaš	Hwala	sbuea	kluba	leewdan	leqruda
52	qTuTa	Hwala	sbuea	kluba	εewdan	qruda
53	qiTTaTan* mšaš	Hwala	sbuea	kluba	εewdan	qruda
54	qTuTa* mšaš	Hwala	sbuea	klab	εewdan	qruda
55	qiTaT* mšaš	Hwala	sbuea	kluba	εewdan	qruda
56	mšaš	Hwala	sbuea	klab	εewdan	qruda
57	qiTaT* mšaš	Hwala	sbuea	klab	εewdan	qruda
58	qiTaT* muššat	Hwala	sbuea	klab	εewdan	qrud
59	qiTaT* mšaš	Hwala	sbuea	kluba	εewdan	qruda
60	qiTTaT	Hwala	sbuea	kluba	εewdat	qruda
61	quTuT* mšaš mšuš	Hwala	sbuea	klab* kilab	εewdan	qruda
62	qTuTa* mšaš	Hwala	sbuea	leklab	leewdan	qruda
63	qeTTaT* mšaš qiTaT	Hwala	sbuea	klab	εewdat*	qruda
64	qTuTa	Hwala	sbuea	klab	εewdan	qruda
65	qTaT* mšaš	Hwala	sbuea	kluba	εewdan*	qruda
66	qTuT* qTuTa qeTTan	Hwala	sbuea	kluba* klab	εewdan	qruda
67	qTuT	aHwal* kebš	sbuea	klab	ewad	qruda
68	qTuTa	Hwala	sbuea	klab	ewad	qruda

## 182 Appendix 2

69	qTuTa* qiTaT	Hwala	sbuea	klab	leewad	qruda
70	qTuTa* mšuša	Hwala	sbuea	klab	ewad	qruda
71	qTuT	Hwala	sbuea	aklab	ewuda* kidar	qruda
72	qTuT	Hwala	sbuea	klab	leewad* kidar	qruda
73	qTuT* quTuT	Hwala	sbuea	klab* kilab	xuyul* eid euyud	qrud* qurud
74	qTuT	Hwala	sbuea	klab	aewad* kidar kabayu	qrud* qurud
75	qTuT	Hwala	sbuea	klab	xyula	qrud
76	qTuT	Hwala	sbuea	klab	eewdan	qruda* qurud
77	qTuTa* qiTaT	Hwala	sbuea	klab	leewad	qruda
78	qTuT	Hwala	sbuea	kluba* djru	ewad	qrud
79	qTuT	Hwala	sbuea	klab	kidar	qrud
80	qTuT	Hwala	sbuea	klab	leewad* kyader	qruda

	<i>Hmar</i>	<i>nmer</i>	<i>dubb</i>	<i>fil</i>	<i>γrab</i>	<i>nser</i>
51	Hmir* leHmura	nmura	dbuba	fyula	γruba	nsura
52	Hmir	nmura	dubabun	filin* filat	γruba* γrab	nsura
53	Hmir	nmura	dbuba	fil	γerban	nsura
54	Hmir	nmura	dibaba	fyula	γruba	nsura
55	Hmir	nmura	dbuba	fyula	γirban* γrub γrubin	nsura
56	Hmir	nmura	dbuba	fiyala	lyerban	nsura
57	Hmir	nmura	dbuba	friyala	γrareb	nsura
58	Hmir	nmura	dibaba	fyula	γrareb	nsura
59	Hmir	nmura	dbuba	fyula	γruba	nsura
60	Hmir* Hmura	nmura	dubab	filat	γruba	nsura
61	Hmir	nmura	dbuba	fyal	γrabat* γrabiyyin	nsura
62	Hmir	nmura	dibaba	fiyala	γerban	nusur
63	Hmir	nmura	dbuba	fyula	γrubat	nsura
64	Hmir	nmura	dyuba	fyal	γrub	nsura
65	Hmir	nmura	dbuba	fyula* fiyala	γrub	nsura
66	Hmir	nmura	dbuba	fyul	γruba	nsura
67	Hmir	nmura	dbuba	fyula	γerban* γruba	nsura
68	Hmir	nmura	dbub	fyula	γerban	nsura
69	Hmir	nmura	dyuba	fyula	γrabat	nsura
70	Hmir	nmura	dbuba	fyula* fyul	γruba	nsura
71	Hmir	nmura	dbuba	fyula	γruba	nsura
72	Hmir	nmura	dbab	fyula	γruba	nsur* nser
73	Hmir* Hamir	nmura	dubub	fyula* fiyala	γurabat	nsura
74	Hmir	nmura	--	fyula	γurban	nsura
75	Hmir	nmura	dibaba	fyula* fiyalat nusur	γuraba* γrareb	nsura*
76	Hmir	nmura	dbuba	fyula	γruba	nsura
77	Hmir	nmur	dibaba	fyula	γerban	nsura
78	Hmir	nmur	dbab	fyula	γruba	nsura
79	Hmir	nmura	dibaba	fyula	γerban	nsura
80	Hmir	nmura	dibaba	fyula	γerban	nsura
51	<i>dib</i> dbuba	<i>tecleb</i> taecalib	<i>Helluf</i> Hlalef	<i>ežel</i> ežula	<i>ferruž</i> fruža	<i>žmel</i> žmula

52	dibat	tealeb	Hlalef* Helluf	ežula	frarež	žmula
53	dyuba	tealeb	Hlalef	ežula	frarež	žmula
54	dbab	tealeb* taealib	Hlalef	ežula	frarež	žmula
55	diab	taealib	Hlalef	ežula	frarež	žmula
56	dyab	tealeb	Hlalef	ežula	frarež	žmula
57	diyab	tealeb	Hlalef	ežula	frarež	žmula
58	dyuba	tealeb	Hlalef	ežula	frarež	žmula
59	dyuba	tealeb	Hlalef	ežula	frarež	žmula
60	dyuba	tealeb	Hlalef	ežula	frarež	žmula
61	dyuba	tealeb	Hlalef	ežula	frarež	žmula
62	dyab	taealib	Hlalef	ežula	frarež	žmula* nagat
63	dyuba	tealeb	Hlalef	ežula	frarež	žmula
64	dyub	taealib	Hlufa	ežula	frarež	žmula
65	dyuba	tealeb	Hlalef	ežula	frarež	žmula
66	dyuba* dyab	tealeb	Hlalef	ežula	frarež	žmula* žmal
67	dyuba	tealeb	Hlalef	ežula	frarež* fruža	žmula
68	dyuba	tealeb	Hlalef	ežula	frarež	žmula
69	dyuba	tealeb	Hlalef	ežula	frarež	žmula
70	dyub	tealeb	Hlalef	ežula	frarež* dyuka	žmal
71	dyuba	taealib	Halalif	ežula	frarež	žmula
72	dyuba	tealeb	Hlalef	ežula	frarež	žmula
73	dyuba	taelabat	Hlalef	ežula	frarež	žmula
74	dyab	taealib* surru	Hlalef	ežula	frarež	žmula
75	dyuba	taealib	Hlalef	ežula* eužul aežal	frarež	žmula
76	dyab	tealeb	Hlalef	ežula	frarež	žmula
77	dyuba	taealib	Hlalef	ežula	frarež	žmula
78	dyuba	tealeb	Hlalef	ežula	frarež	žmula
79	dyuba	taealib	Hlalef	ežula	frarež	žmula
80	dyuba	tealeb	Hlalef	ežula	frarež	žmula
	<i>kursi</i>	<i>HiT</i>	<i>ktab</i>	<i>mekteb</i>	<i>radyu</i>	<i>stilu</i>
51	krasa	HyuTa	ktuba	mektuba	radyuwat	stiluwat
52	krasa	HyuTa	ktuba	mektubat	radyuwat	stiluwat
53	krasa	HyuTa	ktuba	makatib	radyuwat	stiluwat
54	krasa	HyuTa	ktuba	makatib	radyuwat	stiluwat
55	krasa krusa	HyuTa	ktuba	makatib	radyuwat	stiluwat



56	krasa	HyuTa	ktuba	mkateb	radyuwat	stiluwat
57	krusa	HyuTa	ktuba	mkateb	radyuwat	stiluwat
58	krasa	HyuTa	ktuba	makatib* kuttab	radyuwat	stiluwat
59	krasa	HyuTa	ktuba	mkateb* makateb	radyuwat	stiluwat
60	krasa	HyuTa	ktuba	mkateb	radyuwat	stiluwat
61	krasa	HiTan	ktuba	mkatib	radyuwat	stiluwat
62	krasa	HyuTa	ktuba	makatib	radyuwat	stiluwat
63	krasa	HyuTa	ktub	mkateb	radyuwat	stiluwat
64	krasa	HyuTa	ktuba	makatib	radyuwat	stiluwat
65	krasa	HyuTa	ktuba	makatib	rwadiu	stiluwat
66	krasa	HyuTa* HiTan	ktuba	mkateb* maktabat makateb	radyuwat	stiluwat
67	krasa	HyuTa	ktuba	mkateb	radyuyat	stiluyat
68	krasa	HyuTa	ktuba	mkateb	radyuyat	stiluwat
69	krasa	HyuTa	ktub	mkatib	radyuyat	stiluyat
70	krasa	HyuTa	ktub	makatib	radyuyat	stiluyat
71	krasa	HyuTa	ktuba	makatib	radyuwat	stiluwat
72	krasa	HyuTa	ktuba	makatib	radyus	stilus
73	krasa	HyuT	ktuba	makatib* maktabat	radyuwat	stiluwat
74	krasa	HyuT	ktuba	makatib* mkateb	radyuwat	stilus
75	krasa	HyuT* HiTan	ktuba* kutub	makatib	radyus	stilus
76	krasa	HyuTa	ktuba	mektabat	radyuwat	siluwat
77	krasa	HyuTa	ktuba	makatib	radyuwat	stilus
78	krasa	HyuTa	ktuba	makatib	radyus	stiluwat
79	krasa	HyuT	ktuba	mkatib	radyus	stilus
80	krasi	HyuT	ktuba	makatib	radyus	stilus
51	<i>SenDuq</i> SnaDeq	<i>garru</i> gwarru	<i>bab</i> biban* byuba	<i>yedd</i> leyedin* lyuda	<i>Tellab</i> Tluba* Tullab	<i>byeD</i> beyDin
52	SnaDeq	gwarru	biban	yeddin	Tellabin* Tellab	beyDin
53	SnaDeq* SenDuqat	gwarru	biban	yeddin* ydin	Tlaleb* Tellabin	beyDin
54	SnaDeq	garruwat	biban	iydan	Tellaba	beyDin
55	SnaDeq	gwarru	biban	yeddin	--	beyDin
56	SnaDeq	gwarru	biban	yeddin	Tellaba	beyDin
57	SnaDeq	gwarru	biban	yeddin	Tellaba	beyDin
58	SnaDeq	gwarru	biban* bwab	leydin* yduda	Tellaba	beyDin* byuDa

59	SnaDeq	gwarru* garruwat	biban	yduda	Tellaba	beyDin
60	SnaDeq	gwarru	biban	yeddat	Tellaba	byuDa
61	SnaDeq	gwarru* garruwat	biban	liydin* liydan alyad	Tellaba	beyDin
62	SnaDeq	gwarru	biban	leydin	Tellaba	buyeD
63	SnaDeq	gwarru	biban	yeddin	Tellaba	beyDin
64	SnaDeq	gwarru	biban	yeddin	Tellabin	beyDin
65	SnaDeq	gwarru	biban	leydin* aydin	Tellaba* Tlaleb	beyDin* byuDa
66	SnaDeq	gwarru* garruwat	biban* bwab	yeddin	Tlaleb	beyDin
67	SnaDeq	garriyat	biban* bwab	yeddin	Tellaba* Tlaleb	buyeD
68	SnaDeq	gwarra	biban	yeddin	Tellaba	buyeD
69	SnaDeq	garriyat	biban	leydin	--	--
70	SnaDeq	gwarru	biban	iydiyyat	Tlaleb	beyDin* byaD
71	SnaDeq	grarus	abwab	aydin	Tlaba	buyeD
72	SnaDeq	grarus	biban	yeddin	Tluba* seεεay	buyed
73	SnaDeq	garriwat	biban* abwab	yeddin	Tullab* seεεay	buyeD
74	SnaDeq	garruwat* garrus	biban	yeddin	Tellaba	buyeD
75	SnaDeq	garrus	biban	yeddin	Tullab	buyeD
76	SnaDeq	garriwat	biban	yeddin	Tellaba	--
77	SnaDeq	garrus	biban	yeddin	Tlaleb* Tulbu	beyDin* byuD
78	SnaDeq	graru	biban	yeddin	Tlaleb	buyeD* byuDa
79	SnaDeq	garrus	biban	yeddin	Tellaba	buyeD
80	SnaDeq	grarus	biban	yeddin	Tlaleb	buyeD

## B. Experimental group

<i>qeTT</i>	<i>Huli</i>	<i>sbee</i>	<i>kelb</i>	<i>ewad</i>	<i>qerd</i>	<i>Hmar</i>
01 qeTTaT	Huliyin	sbue	klab	eidan	qruda	Hmar
02 qiTin	Huliyin	sbuea	klaba	ewid	qruda	Hmir
03 qiTa	Hulin	sbaein	kelbin	ewdin	qerdin	Hmarin
04 qiTTan	Hwala	sbuea	leklab	ewdatun	leqruda	Himaratu
09 qiTun	Hulani	asbaeun	klab	ewdani*	qirdani	Himarun
				aewad		
10 qeTuT	Hwala	sbue	kilab	ewad	qruda	Hmir
11 qiTun	Huliya	sebeat	kelba	ewdat	qerdar	Hmara
12 qTuT	Hwala	sbuea	kluba	ewad	qrud	Hmir
13 qTuT	Huwlis	sbuea	klab	ewad	qrud	leHmir
14 qiTun	Hwala	sbee	klab	lxeyl	leqrad	Himarun
15 qiTun	Hwal	asbae	aklab	aewad	aqrud*	leHmir
					aqrud	
16 qTuTa	Hwawel	sbuea	klab	ewad	qruda	Hmir
17 qeTuT	aHwal	sbuea*	leklab	aewad	qruda	leHmir
		asbae				
18 mšuš	kbaš	asbae	klab	ewad	qruda	Hmir
19 qiTun	Hwala*	sbue	klab	leewad	leqrud	leHmir
	Hulis					
22 qTuT	Hwala	sbue	klab	ewad	qrud	Hmir
23 qTuT	leHwala	sbuea	leklab	--	leqrud	leHmayer
24 qTuT	Hwala	sbuea	klab	ewad	qruda	Hmir
25 qTuT	Hwala	sbuea	kluba	ewad	qruda	Hmir
26 qeTTs	Hulis	sbuea	klab	leuwds	qruda	Hmars
<i>nmer</i>	<i>dubb</i>	<i>fil</i>	<i>γrab</i>	<i>nser</i>	<i>dib</i>	<i>teeleb</i>
01 nemrat	--	filan	γrabiyyin*	nesren	dbub	teelab
			γrabiyyat			
02 nmura	duba	fila	γrab	nsura	dyuba	teuba
03 nmarin	dubbin*	filin	γrabin	nsirin	debbin	teabilin
	dubbun					
	dubbatun					
04 nmura	dubbun*	fil	γraba	nsura	dib	teeluba
	dubbatun					
09 namirun	dubbun	filani	ayrab	nser	dbub	taelabun
10 nemur	adbab	fil	γrub	nsura	dyuba	teeleb
11 --	dubba	fila	γraba	nsura	diba	teebilitat
12 nmura	dubbin	fyula	γrayeb	nsura	dyuba	teeluba
13 nmura	dubbun	fyula	γrabs	nsura	dyub	teeluba
14 nmar	dubbun	lfil	ayrab	nsar	dyab	teelab
15 anmar	diban	falun	ayrab	ansar	di?ban	taelaban
16 nmura	dubba	filun	γrabun	nasrun	dibun	teilub
17 nmura	dubbin	lfil	γurub	nsura	dyuba	tealeb

18	nmura	dubub	fyula	γerban	nsura	dyuba	tealeb
19	nmura	dbab	fyula	γruba	nsura	dyuba	tealeb
22	nmar	dbub*	ful*	γrub	nsur	dbub	teelab
		dubbab	filal				
23	nmir	dubbun	filun	γraben	nsiran	dyuba	tealbun
24	nmura	dbuba	fyula	γruba	nsura	dyuba	tealeb
25	nmur	dbub	fyal	γerban	nesran	dyuba	tealeb
26	nmura	dubbs	filan	γrabs	nsura	dyuba	teelebs

	<i>Helluf</i>	<i>ežel</i>	<i>ferruž</i>	<i>žmel</i>	<i>kursi</i>	<i>HiT</i>
01	Hellufin	eežlin	ferružin	žmel	kursin	HyuT*
						HiTin
02	Hellufin	ežula	ferruža	žmula	krusa	HiTan*
						HiTana
03	Hellufin	ežalin	ferružin	žmilin	kursin	HiTin
04	Hellufa	ežula	ferruža	žmula	krasa	HyuT
09	Hellufun	eažalun	ferružun	žamalun*	krasa	HyuT
				žmalun		
10	Hlalif	ežul	djaž	žmula	krasa	HyuT
11	Helluf	eežla	ferruža	žemla	kursiya*	HiTaT
				kursiyat		
12	Hlalef	ežula	frarež	žmula	krasa	HyuT
13	Hlalef	leežula	frarež	žmula	krasa	leHyuT
14	Hlalef	leežal	frarež	žmal	krasa	HyuT
15	aHlaf	aežal	afraž	ažmal	krasa	HiTan
16	Hlalef	ežula	frurež	žmula	krasa	HyuT
17	Hlalef	leeluž	frarež	žmula	krasa	HyuT
18	Hlalef	ežula	frarež*	žmal	krasa	HyuTa
			dyuka			
19	Hlalef	ežula	frarež	žmula	krasa	HyuT
22	Hlalef	ežul	frarež	žmul	krasa	HwayeT
23	Hlalef	eežlat	frarež	žmula	krasa	HyuT
24	Hlalef	ežula	frarež	žmula	krasa	HyuT
25	Hlalef	ežul	frarež	žmal	krasa	HyuT
26	Hellufs	ežula	ferruž	žmula	krasa	HyuT

	<i>ktab</i>	<i>mekteb</i>	<i>radyu</i>	<i>stilu</i>	<i>SenDuq</i>	<i>garru</i>
01	kutub	mektebin	radyuwat	stiluwat	SnaDeq	garru
02	ktuba	mektuba	--	stiluwat	SenDuqat	garru
03	ktabun	mektebin	radys	stilus	SenDuq	garru
04	lektuba	lmektuba	radyatun	stiluwat	SnaDeq	gwarru
09	ktub	mekateb	radyunat	stiluyat	--	garru
10	ktuba	mkatib	radyunat	stiluyat	SnaDiq	garruyat
11	ktubiyy	mektebiya	radyuya	stiluwat	SenDuqat	garruwat
12	ktub	mektaba	radys	stilus	SnaDeq	garrus
13	lektuba	mkatib	radys	stilus	SnaDeq	grarus

14	lektuba	makatib	radyuwat	stiluwat	SnaDeq	garruwat
15	ktuba	mektabat	--	stiluyat	SenDuqat	garruyat
16	ktuba	maktabun	radyun	stilawat	SnaDeq	garut
17	ktub	makatib	radyuwat	stiluwat	SnaDeq	garruwat
18	ktub	makatib	radyuwat	stiluyat	SnaDeq	garruyat
19	kutub	makatib	radjus	stilut	SanaDiq	garrus
22	ktub	mektabat	radyunat	stilawat	SnaDeq	garruwat
23	ktuba	makatib	radyuwat	stiluwat	SnaDeq	grarus
24	ktuba	mkateb	radyuwat	stiluwat	SnaDeq	garruwat
25	ktub	makatib	radyunat	stiluyat	SnaDeq	garruyat
26	ktuba	mektuba	radjus	stilus	SenDuqs	garrus

<i><b>bab</b></i>	<i><b>yedd</b></i>	<i><b>Tellab</b></i>	<i><b>byeD</b></i>
01 biban	ydin	Tellabin	beyDin* beyDat
02 babun	yeddin	Tellabat	byeD
03 bab	yeddin	Tellabin	byeD
04 biban	yeddin	Twaleb	beyDin* byuD
09 biban	yeddin* yeddin	Tellabun	buyeD
10 biban	yeddin	Tellaba	buyeD
11 lbabat	yeddat	Tellabat	beyeD
12 biban	yeddin	Tellaba	beyDin
13 biban	yeddin	Talabat	buyeT* byuTa
14 biban	leydin* yeddun	Tellaban	beyDin
15 biban	yeddin	Tellabin	byaD
16 biban	yeddin* yadun	Tluba	bayDin
17 biban	yeddin	Tellaba	beyDin
18 biban	yeddin	Tlaleb	buyeD
19 biban* abwab	yadayn	Tallabun	buyeD
22 babat	yeddin* ydud ydudat	Tlaleb	buyeD
23 biban	yeddin	Talbin	buyeD
24 biban	yeddin	Tlaleb* Talben	buyeD
25 biban	yeddin* yeddin	Tellaba	buyeD
26 biban	yeddin	Tellabs	buyeD

## Appendix 3

### A. List of stimuli sentences in the cue-validity experiment (before randomization).

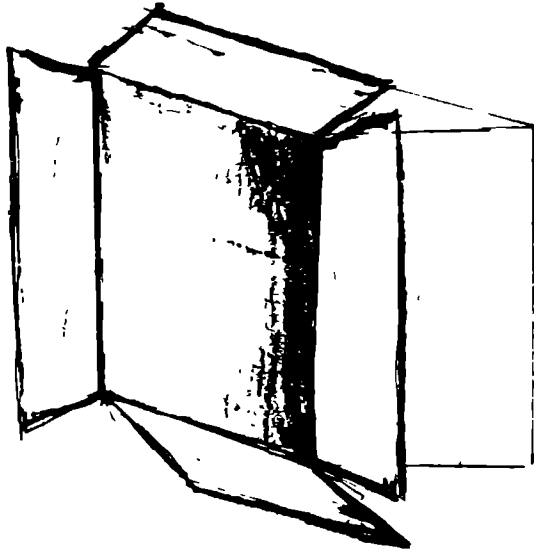
N:	Noun is animate
n:	Noun is inanimate
N1/ n1:	First noun in the utterance
N2/ n2:	Second noun in the utterance
V1:	Verb agrees with first noun in the utterance
V2:	Verb agrees with second noun in the utterance
V0:	Verb agrees with both nouns
N1' / n1':	First noun in the utterance is stressed
N2' / n2':	Second noun in the utterance is stressed

Pattern:	MA Utterance:	Gloss:
01. N1 V0 N2	<i>ferruž šra ewd</i>	rooster bought horse
02. N1 N2 V0	<i>ewd fil bae</i>	horse elephant sold
03. V0 N1 N2	<i>eeDD dib ferruž</i>	bit wolf rooster
04. N1 V0 n2	<i>kelb bae HiT</i>	dog sold wall
05. N1 n2 V0	<i>qerd stilu hezz</i>	monkey pen lifted
06. V0 N1 n2	<i>šaf nser kursi</i>	saw eagle chair
07. n1 V0 N2	<i>mekteb eeDD sbee</i>	desk bit lion
08. n1 N2 V0	<i>garra Dreb hmar</i>	cigarette hit donkey
09. V0 n1 N2	<i>xebbee SenDuq huli</i>	hid box ram
10. N1 V1 N2	<i>fyal herrsu helluf</i>	elephants broke pig
11. N1 N2 V1	<i>qrud Helluf xebbeu</i>	monkeys pig hid
12. V1 N1 N2	<i>defeu Hmir nmer</i>	pushed donkeys tiger
13. N1 V1 n2	<i>nmura hezzu kursi</i>	tigers lifted chair
14. N1 n2 V1	<i>Hwala radyu herrsu</i>	rams radio broke
15. V1 N1 n2	<i>hezzu klab ktab</i>	lifted dogs book
16. n1 V1 N2	<i>SnaDeq defeu dib</i>	boxes pushed wolf
17. n1 N2 V1	<i>HyuT nser šafu</i>	walls eagle saw
18. V1 n1 N2	<i>šraw radyuyat dubb</i>	bought radios bear
19. N1 V2 N2	<i>žmel xebbeu qTuT</i>	camel hit cats
20. N1 N2 V2	<i>teeleb sbuea defeu</i>	fox lions pushed
21. V2 N1 N2	<i>baeu žmel yerban</i>	sold camel crows
22. N1 V2 n2	<i>teeleb šafu biban</i>	fox saw doors
23. N1 n2 V2	<i>γrab ktuba šraw</i>	crow books bought
24. V2 N1 n2	<i>Derbu ežel makatib</i>	hit calf desks
25. n1 V2 N2	<i>garra Derbu ežula</i>	cigarette hit calfs
26. n1 N2 V2	<i>bab dbuba eeDDu</i>	door bears bit
27. V2 n1 N2	<i>herrsu stilu qTuT</i>	broke pen cats
28. N1' V0 N2	<i>'nser xebbee nmer</i>	eagle hid tiger
29. N1' N2 V0	<i>'teeleb sbee herres</i>	'fox lion broke
30. V0 N1' N2	<i>eeDD 'dubb nmer</i>	bit 'bear tiger

31. N1' V0 n2	'eewd Drebb garru	'horse hit cigarette
32. N1' n2 V0	'ežel bab dfee	'calf door pushed
33. V0 N1' n2	hezz 'kelb stilu	lifted 'dog pen
34. n1' V0 N2	'SenDuq hezz dib	'box lifted wolf
35. n1' N2 V0	'kursi ferruž xebbee	'chair rooster hid
36. V0 n1' N2	Drebb 'radyu fil	hit 'radio elephant
37. N1' V1 N2	'tealeb šraw Hmar	'foxes bought donkey
38. N1' N2 V1	'nsura qerd baew	'eagles monkey sold
39. V1 N1' N2	xebbeu 'Hlalef qeTT	hid 'pigs cat
40. N1' V1 n2	'klab šafu ktab	'dogs saw book
41. N1' n2 V1	'Hwala mekteb hezzu	'rams desk lifted
42. V1 N1' n2	šafu 'Hmir bab	saw 'donkeys door
43. n1' V1 N2	'stiluyat eDDu Helluf	'pens bit pig
44. n1' N2 V1	'SnaDeq fil šraw	'boxes elephant bought
45. V1 n1' N2	herrssu 'makatib huli	broke 'desks ram
46. N1' V2 N2	'qerd defeu dbuba	'monkey pushed bears
47. N1' N2 V2	'γrab frarež šafu	'craw roosters saw
48. V2 N1' N2	defeu 'dib eewdan	pushed 'wolf horses
49. N1' V2 n2	'sbee baew krasa	'lion sold chairs
50. N1' n2 V2	'γrab radyuyat eDDu	'craw radios bit
51. V2 N1' n2	baew 'žmel ktuba	sold 'camel books
52. n1' V2 N2	'HiT herrsu qTuT	'wall broke cats
53. n1' N2 V2	'HiT žmal Derbu	'wall camels hit
54. V2 n1' N2	šraw 'garru ežula	bought 'cigarette calfs
55. N1 V0 N2'	dib Drebb 'hmar	wolf hit 'donkey
56. N1 N2' V0	sbee 'ežel dfee	lion 'calf pushed
57. V0 N1 N2'	herres tealeb 'fil	broke fox 'elephant
58. N1 V0 n2'	kelb šaf 'garru	dog saw 'cigarette
59. N1 n2' V0	γrab 'bab eDD	craw 'door bit
60. V0 N1 n2'	hezz dubb stilu	lifted bear 'pen
61. n1 V0 N2'	kursi šra 'sbee	chair bought 'lion
62. n1 N2' V0	radyu 'Helluf šra	radio 'pig bought
63. V0 n1 N2'	šaf bab 'Huli	saw door 'ram
64. N1 V1 N2'	dbuba herrsu 'Huli	bears broke 'ram
65. N1 N2' V1	qrud 'qeTT xebbeu	monkeys 'cat hid
66. V1 N1 N2'	xebbeu nmura 'dib	hid tigers 'wolf
67. N1 V1 n2'	fyal defeu 'SenDuq	elephants pushed 'box
68. N1 n2' V1	tealeb 'radyu baew	foxes 'radio sold
69. V1 N1 n2'	šraw Hlalef 'mekteb	bought pigs 'desk
70. n1 V1 N2'	stiluyat hezzu 'ferruž	pens lifted 'rooster
71. n1 N2' V1	stiluyat 'žmel hezzu	pens 'camel lifted
72. V1 n1 N2'	Derbu SnaDeq 'Hmar	hit boxes 'donkey
73. N1 V2 N2'	qerd xebbeu 'nsura	monkey hid eagles
74. N1 N2' V2	eewd 'klab Derbu	horse 'dogs hit
75. V2 N1 N2'	defeu γerban 'nser	pushed craws 'eagle
76. N1 V2 n2'	ežel herrsu 'ktuba	calf broke 'books
77. N1 n2' V2	qeTT 'HyuT šafu	cat 'walls saw



78. V2 N1 n2'	<i>eeDDu žmel 'gwarra</i>	bit camel 'cigarettes
79. n1 V2 N2'	<i>mekteb eeDDu 'nmura</i>	desk bit 'tigers
80. n1 N2' V2	<i>kitab 'eewdan herrsu</i>	book 'horses broke
81. V2 n1 N2'	<i>baeu kursi 'frarež</i>	sold chair 'roosters

**B. Example of picture sheet**

## Appendix 4

### Phonology

#### A. Perception: List of monosyllabic nonce words (N=48)

(numbers refer to order of stimuli in the randomized list)

(different)	H/x	(same)
mHef/mxef		mxef/mxef
xmen/Hmen		Hef/Hef
Her/xer		xer/xer
rex/reH		mHef/mHef
	h/H	
hmen/Hmen		Her/Her
mhen/mHen		mhen/mhen
neH/neh		mHen/mHen
hef/Hef		hef/hef
	D/d	
beD/bed		Dmeq/Dmeq
Dmeq/dmeq		Deε/Deε
mdeq/mDeq		dmeq/dmeq
Deε/deε/		deε/deε
	S/s	
Seγ/seγ		Seγ/Seγ
Smel/smel		seγ/seγ
mse/mSen		smel/smel
fes/fes/		Smel/Smel
	ε/γ	
een/γen		een/een
mγel/mēel		γen/γen
emen/γmen		γmen/γmen
meγ/mēε		emen/emen
	k/q	
ken/qen		mek/mek
mgef/mkef		mkef/mkef
kmen/qmen		meq/meq
meq/mek		mgef/mgef

**B. Answer sheet for the phonology experiment**

(Instruction: Put a cross in the circle corresponding to your answer: if you think the words in the pair you heard are the same, put a cross under 'JA' "YES", if yo think the words are different, put a cross under 'NEE' "NO."

Naam: .....

(JA)	(NEE)
<input type="radio"/>	<input type="radio"/>

<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------

<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------

<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------

<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------

<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------

<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------

<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------

<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------

<input type="radio"/>	<input type="radio"/>
-----------------------	-----------------------

**C. Production: List of individual words (N=25; randomized)**

<b>Dutch word</b>	<b>Expected MA word</b>	<b>Gloss</b>
<i>apple</i>	<i>teffaH(a)</i>	apple
<i>afspraak</i>	<i>maweid</i>	appointment; rendez-vous
<i>grond</i>	<i>larD</i>	ground; floor
<i>geel</i>	<i>Sfer</i>	yellow
<i>aap</i>	<i>qerd</i>	ape; monkey
<i>melk</i>	<i>Hlib</i>	milk
<i>horloge</i>	<i>sa?a</i>	watch
<i>ziek</i>	<i>mriD</i>	sick
<i>tand</i>	<i>Dersa</i>	tooth
<i>zwaar</i>	<i>tqil</i>	heavy
<i>beneden</i>	<i>liaHt</i>	below
<i>dorst</i>	<i>εTeš</i>	thirst
<i>donker</i>	<i>DDlam</i>	dark
<i>de helft</i>	<i>neSS</i>	half
<i>coffie</i>	<i>lqehwa</i>	coffee
<i>elf</i>	<i>Hdaš</i>	eleven
<i>gezin</i>	<i>εa?ila</i>	family
<i>gast</i>	<i>Dif</i>	guest
<i>klein</i>	<i>Sγir</i>	little; small
<i>lezen</i>	<i>qra(ya)</i>	read(ing)
<i>markt</i>	<i>suq</i>	market
<i>gevangenis</i>	<i>Hebs</i>	jail
<i>een jaar</i>	<i>εam</i>	one year
<i>licht</i>	<i>Duw</i>	light
<i>ochtend</i>	<i>SbaH</i>	morning

**D. Sample Narratives (3 from experimental group, 3 from control group)**

Narratives based on Mayer's 1969 picture book *Frog: Where Are You?* Nar = Narrator; Int = Interviewer.

**(i) Experimental group (Participants 02, 03, and 26)****D.L. (02)**

[Nar.: 'ma ereft ašnu had šši..ma ka neerefs kull ši bi leerbiyya.'

"Oh, I don't know what this is; I don't know everything in Arabic."]

waHed derri kan kayšuf waHed ežžrana eh.. f ellil el-kelb temma, Hetta huwwa kayšuf fih

A boy was looking (at) a frog eh... at night, the dog (was) there, he was also looking

u huwwa hadak..we.. dderri ka-yenees u hadik ažžrana Haydat men waHed buqala ..waš had ešši

And (he) that .. and..the boy is goes to sleep, and that frog got out from a žar .. what is this

Haydat f ellil u huwwa faak; ma kanš žžrana

(It) got out at night, and he got up; there is no frog

u huwwa dar leHwayžu, w eh kan ikelleb eh.. ežžrana, kelb TaH men Seržem

and he put on his clothes, and he was searching eh.. the frog, the dog fell off the window

kan kaykallab eh.. ežžrana, kan hadak nmel wella kan eh.. kan-u

He was looking for eh.. frog, (There) was those ants or something were .. they were

waHed kelb kan kay kay.. de.. em.. f ši waHed eh..ššerža, u kan waHed tuqba ...

a dog was ..de..em.. in some a eh..tree, and (there) was a hole ...

ygul fin kayen š..žrana, finek enti? u kayen waHed TTubba žat men lerD

ka-He is saying where is s... frog, where are you? And there is a rat (it) came from the ground

huwwa mša waHed eh.. ešerža u rkeb fugea fugha, u hreb Hit ža haduk eh..

He went (to) a eh.. tree and got on it, and (he) ran away because those eh ... came

en.. elmenn [nnmel] wella ši Haža, u mša waHed eh.. u Tlee f waHed eh.. Hežra

a.. ants or something, and went (to) eh .. and climbed on eh.. rock

kanet waHed eh.. yah.. šnu eh.. eh.... waHe eh.. ši Haža

There was a eh ..yes [Dutch]. what eh.. eh... a.. eh.. something

xattu u laHtu men..eh.. fi eh..lma u TaH, u šmee eh žrana ntaeu,

(It) took him and threw him off .. eh..in eh.. the water, And he fell, and he heard eh his frog

gal l kelb skut, u kan išuf f el eh.. eh.. fin kayna

(he) told the dog quiet, And he was looking at eh.. eh.. where (it) was

u kan šaf žrana mea waHed eh..eh.... andere žrana, waHed vroww

And he saw (a) frog with eh.. eh.. another [Du] frog, a female [Du]

mha ntaeu kan, eendum wlidat, u hadak dderri xad waHed eh..

its mother, they had little ones (offspring), and that boy took a eh..

lewliat, u mša ddaha

little ones, and (he) took it.

**M.A. (03)**

[Nar (Du): comment of participant: I know a lot of words that are here, but I can't use them, example 'pot' ...]

waHd el eayel u waHdel Dru eendum waHd el..eh...waHed leayel u waHed dru u waHdel zeana

a boy and a dog have a a....a boy and a dog have a f.. frog

uh la la.. waHed leayel u waHed deu eendum waHed Zeaya f el waHd elkas

Oh no no ... a boy and a dog have a frog in a glass

fuya? fuyaq hadak eayel kan neas u hadak ook [Du] hadak Zea kayemsi fHalu men had elkas

When that boy was sleeping and that also that frog went away from this glass

*fuyaq huma em.. opstaan*

when they em .. get up (Du)

[Nar (in Dutch): *ik kan het woord maar ik kan niet bij komen*

"I know the word but I can't get to it"]

*fuyaq huma naDu huma ka kansuf hadak leze a msi f Halu f .. u .. u huma kansuf fayen fayen*

When they got up they saw that frog went away in .. and ... and they saw [checked] where where

*hadik eze a, H.. hu hadak eayel katsuf f el waHed el.. SebbaT fayen fayen hadak ze a*

that frog [was] ... th that boy is looking in the a the ... shoe where where that frog

*u hadak deu.. katsuf f el had el kas, bet..? hadak elkas masi eh.. masi masi kbir u hadik l eh...*

And that dog .. is looking in the this glass ... that glass [is] not not big and that the eh..

[Nar (in Dutch) *hoofd, hoe zeg je dat* "head, how do you say that?]

*eas (ras) [Nar (in Dutch): ik ken het well, maar ik kan niet opkomen*

"I'm sure I know it but I can't get to it] "

*hadak eas, dyal hadak de u huwwa eendu f el had l-kas, u daba huwwa kat.. huwwa ..*

that head of that dog and he has in this glass, and now he is .. he ..

[Nar. (in Dutch): *dat woord kan ik niet, vastzitten* "that word, I don't know it 'to get stuck'"]

*katHsel f el had el-kas fuyaq had el eayel katsuf f e beGGa hadik dGru eendu hadak el..kas*

gets stuck in this glass When this boy looks outside that dog has that glass

*f el ... f el eas eh hadi hadik deu kan naas eh ..*

in the ... in the head eh this that dog has jumped eh ...

[Nar: 'ne??es' ??]

*hadak Zeu kat?as fel fel berra ...*

That dog jumps in the in the outside

*Fuyaq hadak eayel katsuf haydak*

When that boy is looking like this

*u huwwa msit n l hadak deu u..eeddel l-kas men*

and he I go [he went] to that dog and .. fixed the glass from

*hu.. huwwa n?as*

he ... he jumped

*si haza dyal haydak*

something like that

*fuyaq huma fel barra*

when he jumped in the outside

*hu.. hadak eayel kateayyeT*

th.. that boy was calling

*el.. le zeay zeay.. zeay zeaya*

the .. frog frog .. frog frog

*u hadak deu kat.. em.. katsuf fel barra*

And that dog is .. em.. is looking outside

*huma katsuf em.. em.. [Nar (in Dutch): moeilijk deze "this one is difficult"]*

*eh..huwa eh.. hadak eayel katsuf f el ?arD*

eh.. that eh.. that boy is looking at the floor

*u hadak deu suft si haza fel sez. f el seze a*

And that dog I saw [he saw] something in the tree

[Nar (in Dutch): *die worden ken ik allemaal.. ik versta allemaal* "these words I know them all ..

I understand all (everything)"]

*u hadak deu katsuf f el naas? fu*

and that dog is looking in

[Nar (in Dutch): *bijen hoe zeg je dat?* "bees, how do you say that?"]

*fuyaq huwwa katsuf f el*

when he is looking at the

[Nar (in Dutch): hoe heet die bomen? "how are trees called?"]

essezea kayen, zit bezzaf dyal bijen [Du].. n neHHel

tree there is, came a lot of bees ... b bees

fuyaq huwwa suft had haduma ... huwa kat zei men .. men.. haduma..

when he saw these ... he ran from from ... these

hadak eayel katsuf f el ... ssezea.. ssezea..

that boy is looking at the .. tree .. tree

u waHed el.. owl..[Du]

and an owl

[Nar. (in Dutch) hoe zeg je uil? "how do you say owl?"]

fuyaq huwa katsuf f el ... sezea waHd el owl.. waHd el-muka

when he is looking at the ... tree an owl [Du] .. an owl [MA]

kat .. kat.. katemsi men hadak el...

is ... is .. leaving from that the ...

[Nar (in Dutch): hoe heet die boom ook weer? "How do you call a tree again?"]

sezea

tree

u hadak zeu du kat em... kat zy men hadu hadak hadum em.. mHel

and that dog du is em .. is running from these those those em bees

ja [Du]... u du daba hadik el eayel katemsi fu? waHed el .. eh..

yes .... and du now that boy is going on top of a .. eh..

berg.. zmel hadak ..[Nar: hoe heet het?] zea zeana

mountain (Du)... camel that [Nar (Du): what is it called?] fr ... frog

huwwa kbet waHed el... [tak, hoe zeg je tak?] waHd essezea..

He caught a the ... [Nar (Du): branch, how do you say that?] a tree

huwwa katdun hadak maši essezea hadak waHed el.. huwa katekbet

He thinks that [was] not a tree that [was] a the ... he is catching

waHed leezala

a deer

f.. wa.. u hadak eza ... ezala kat katze katezei daba

f .. wa .. and that dee ... deer is is run is running now

u huwwa el-fu? u hadik ezeu katna??as temmak

and he above and that frog is jumping there

fuya? fuya? hadak zeaya [hoe heet die zeaya?].

when when that frog [[Nar (Du): how is this called, frog?]

fuya? hadik Gzala kat .. hoe zeg je stoppen?

when that deer is .. [Nar (Du): how do you say to stop?]

weg we? we?fat weqfat had hadik eayel kat vallen..

it st st stopped stopped th that boy falls [Du] TaH

huwwa hadak eayel u hadak deu kaTTaH fel f el-ma

then that boy and that dog fell in the in the water

u huma f el ma u huwwa katsuf men waHed el... ssezea

and he [is] in the water he sees from a ... tree

huwwa kat?ul l hadak du 'skut skut' ana xesni nsuf si haza temmak

he says to the dog 'quiet, quiet' I have to see something there

u huma kansuf temmak f e..u huma..

and they I [they] saw there in e ... and they

[hoe zeg je vinden?].

[Nar (Du): how do you say find?]

u huwwa zebeu hadak el ..zeaya

and then they found that the .. fr ..og



[hoe zeg je die kikker ook weer?] zεa

[Nar (Du): how do you say frog again?] frog

u huwwa katsuf zuz del zεana

and he saw two frogs

u fyaq u huwwa katsuf meZyaan huwwa suft bezzaf dyal ..

and when he looked more carefully he I [he] saw a lot of frogs

hadak...zεana hoe zeg je blij? u huwwa ferHu

that .. frog [Nar (Du): how do you say happy?] and he [they] were happy

u huwwa eendu hadak u daba ahi kat .. u daba ahi [neemt hij hoe zeg je dat]

and he has that and now he is .. and now he is [Nar (Du): he takes, how do you say that?]

u daba xda huwwa waHed dyal hadak fa fεa.. hoe zeg je die ... kikker fa..?

and now he took one of that f .. fr.. [Nar(Du): how do you say this?]

zεana u huwwa kateddi waHed men zεana

a frog and he takes one of the frog

#### S.N. (26)

dderri kan g kan gales

the boy was s was sitting

u yšuf eh.. u ysuf mεa kelb f had l...kas

and he was looking in eh .. and he was looking with the dog in this the ... glass

dderri hahuwwek naees maea had lkelb, u faq

the boy there he is sleeing with this dog, and he woke up

u .. k/ger ..k/ger eh.. kerkra, ma ekelts eliha, lqerqra msat

and the fr .. fr... eh .. frog, [I couldn't remember it], the frog had left

dderri ha huwwa kaysuf f SebbaT fin mšat qerqra

the boy here he is looking in the shoe where the frog went

u huwwa mša isuf berra f.. waš eh.. ysufha

and he went to look outside in ... whether he can see her

lkelb TaH TaH m šerjem u dderri mša eend lkelb, u f..ddah

the dog off the window and the boy went to the dog, and he picked him up

dderri msa l Gaba u y debber ela kerkra

the boy went to the woods and to look for the frog

dderri mša ysuf f waHed l.. lGar yshuf was qerqrea ahi temmak

the boy went to check in a ... a hole to see if she was there

ma kanats temmak kan temmak waHed l exxur Hayawan

she was not there there was another animal

dderri Tlee f ssezra bash iDebber ela qerqra

the boy climbed on a tree in order to look for the frog

u lkelb kan iDebber m ziha luxra

and the dog was looking somewhere else

deb... hadik debban kan itbee eh.. lkelb

fl ... those flies were following the dog

u had dderri TaH f allarD

and this boy fell on the ground

uh dek dderri msa y ... Tlee fug Hežra idebber ela qerqra

and that boy went to ... climb on a rock to look for the frog

u kan i..ilGa eliha

he was calling her

beed waHed eh... smu waHed lHayawan l ... hez ... seddateh u msat bih

then an animal eh ... that an animal the .. took ... took him away  
*u hadik TeyyeHtah f el ma, u bee.. u mea lkelb*  
 and that dropped him in the water, and th [then] ... and with his dog  
*huwwa TaH f el ma u kelb za Tlee fugeh*  
 he fell in the water and the dog came and climbed on top of him  
*u smee qerqra, beed gal l kelb l ss*  
 and he heard a frog, then he told the dog the 'ss'  
*u beed Tlee ela hadik ssezra mša yšuf šta a huwwek temmak,*  
 then he climbed on that tree [and] went to find out what there was  
*u temmak saf qerqra, kanet temmak mea waHed luxra, u eendhum bzuz SGar*  
 and there he saw a frog, it was there with another one, they have little ones  
*beed l.. hada waH eh hadik qerqra eTat lha waHed eh lbeZZ ttaeēh*  
 then the ... that a eh that frog gave to he [him] one of its little ones  
*u huwwa msa mea kelb*  
 and he left with the dog

(ii). Control group; [SA] Standard Arabic

M.B. (55, Casablanca)

*hada waHed eh... lweld gales Hda eh.. fi darhum*  
 (this is) a eh ... boy (he is) sitting next to eh at home  
*hadi qerea u dayer fiha žrana u lkelb tayTell eliha*  
 this is a jar, and he has put a frog into it  
*daba TTifl nees huwwa w elkelb u žžrana herbet*  
 now the boy [SA] slept, he and the dog, and the frog ran away  
*eh.. TTifl u lkelb naDu ma lgaw ga žžrana*  
 eh .. the boy and the dog got up (and) tthey didn't find the frog  
*bda yqelleb eliha f eh f lkušiyya*  
 he started looking ofr her in the kitchen  
*iwa w elkelb bda yqelleb eliha f žžaza*  
 and the dog started to look for her in the [glass] jar  
*eh ..eh.. TTifl tay.. ghewwet eh.. tayšuf men ššeržem*  
 eh ... eh .... the boy is is yelling eh .. is looking from the window  
*u lekib waHla lih žžaz eh.. lqerea fi rasu*  
 and the dog, the [glass] jar eh .. his head was stuck in the the bottle  
*eh.. eh.. hadik smiyytu TTifl berk ifekker, lkelb TaH eh..*  
 eh.. eh.. that that boy was started thinking, the dog fell off.. eh  
*dderri hezz lkelb*  
 the boy picked up the dog  
*du.. u lkelb d.. lHes fih*  
 the dog started licking him  
*u eh.. lk.. dderri eh.. TTifl tayghewwet ela žžrana*  
 and eh the ... d boy eh .. the boy is calling the frog  
*u eh.. lk..hada smiyytu lkelb barek išem*  
 and the d .. eh .. the d.. this here dog was smelling (sniffing)  
*TTifl berk i..qelleb f had lghar u lkelb mša n.. hadak smiyytu ah smiyytu..*  
 the boy was looking in this hole and the dog went to .. that what is it, what is it ...  
*ttae nnHel.. smiyytha, u TTifl kan taytull f eh.. f elHufra maeretš eh..*  
 of the bees .. what is it, and the boy was ?? in eh .. a hole, I don't know  
*qerSu fa?r u had lkelb mess hadik, ssmiyytu, lxaliyya u xrež lih nnHel*  
 was bit by a mouse and this dog touched that, what is, it beehive and a lot of bees came out

*u hadak, smiyytu, lfa?r kan taytell u lkalb .. TaHet lxaliyya*  
 and that, what is it, mouse was ?? and the dog .. the beehive fell down  
*u xruž nnaHl u bda yqgersu TTifl bda kay yšuf fi.. žžduε ttaε ššežra*  
 and the bees came out and started stinging the boy was looking at the branches of the tree  
*a huwwa TTifl TaH eh.. D..D.. eh Derbatu muka u had eh smiyytu*  
 and the boy fell eh ... h... h... was hit by an owl and this, what is it,  
*bda TTifl tabee eh.. hadik lkelb*  
 the boy followed that dog  
*tabeinu haduk nnaHl*  
 the bees were following him  
*eh.. muka tabea TTifl eh .. TTif.. eh muka tatraqbu*  
 eh .. an owl [is] following the boy eh .. the bo... the owl is watching him  
*u TTifl Tlee fug Saxra lkelb bqa lteHt tayšemšem ela š..*  
 and the boy climbed on a rock [SA] the dog stayed below sniffing for some...  
*TTifl Tlee fug eh.. smiyyetha.. ... ghzala u dderi tlee fug eh ghzala*  
 the boy climbed on top of .. what is it.. a deer and the boy climbed on top of the deer  
*ela ra?s rra?s ntaeha u TTifl bqa tayšemšem ela žžrana εawed tani*  
 on its head [SA] head and the boy was sniffing for the frog again  
*ha huwwa t.. eh smiyytu ghzala temmet ghada mrekkba dderi fug rasha bqat ghada*  
 here he is .. eh what is it a deer walked away with the boy on her head went on  
*hiya t.. eh.. leghzala laHet dderri .... laHtu fi birka huwwa w elkelb*  
 she eh... the deer threw the boy off her head ... she threw him in a lake together with the dog  
*u TaH f eh.. lbirka u.. SDeq TTifl lteHt lkelb fug rasu*  
 and he fell in the lake and .. the boy was under and the dog was on his head  
*kanet ššežra meqsuma u TTifl barek ka y.. bgha yel gal l lkelb skut,*  
 the tree was broken and the boy was .. wanted to .. he told the dog to be quiet,  
*bgha yšuf waš kayna, u bda yqellbu eliha fi dik ššežra*  
 he wanted to see whether she was there, and they started looking for her in that tree  
*TTif.. eh.. lkelb šemšem u huwwa yelga žuž DDifDaεat u TTifl tta huwwa bda lkelb inbeH*  
 the b .. eh .. the dog sniffed and he found two frogs and the boy too and the boy started barking  
*huwwa yži eend eh.. ža eendu hadak u lga DDifDaεa lwa.. TTifl u lwel DDifDae*  
 then came to eh.. came to him that and found the frog the b .. the boy and the boy the frog  
*u lkelb u hadak smiyytu TTifl šaf xeržu bezzaf DDifDaεat*  
 and the dog and that what is it the boy saw a lot of frogs coming out  
*u TTifl xad DifDaetu u gal lihum beslama l D.. gal beslama l DDafaDie*  
 and the boy took his frog and said good bye to them to the f.. said good bye to the frogs

#### R.R. (74, Tangier)

*kan waHed leayel, eendu waHd djru u ggrana*  
 there was a boy, he had a dog and a frog  
*kan kayesteemelha kan kayεamelha mezyan*  
 he was using it treating it well  
*u f llil melli nees eh ... ddqet ggrana herbet*  
 at night when he was sleeping, eh... the frog ran away  
*mnin faq men nneas ma žberhaši*  
 when he woke up from sleeping he did not find her  
*naD kayfetteš eliha f SSbaH*  
 he got up and started looking for her in the morning  
*mea džru dyalu šebber dik eh ... žž eh ... žžaža lli kanet fiha .. εayša, εamelha f rasu*

his dog took that eh ... gl eh ... glass [jar] where she was living, he put it on his head

*šwiyya u hiyya TTiH*

what is it and it fell

*TaHet therset teeSSeb bezzaf.. teeSSeb bezzaf eliha..ela dik zzužaža*

it fell and it broke he was really mad .. he was mad at it .. at that glass [jar]??

*men beed mša kayebHet eliha f el ghaba, mša kayfetteš eliha*

then he went to look for [SA] it in the woods, he went to look for it

*tumma eh... men beed mša n waHed eh.. lHufra, Teleet lu... waHed lfa?r..*

then [SA] eh .. then he went to a ... hole, a mouse came out

*Teleet waHed lfara mea lkelb dyalu kan kayteelleq f waHed ššežra*

came out a mouse (while) his dog was reaching at a tree

*u .. mea waHed djbeH d enn.. djbeH d nnHal meallaq f eššežra*

and a hive of b.. a beehive was hanging at the tree

*bda kaytealla elih dak .. dik djru*

he started to reach for it .. that dog

*m baed TeyyHu, žraw murah eh.. žraw murah nnHel*

then he dropped it, they followed him eh .. followed him those bees

*mea..... dak leayel kan mee.. fuq ššežra, yanDuru ?il eh..*

that boy was ... on the tree, he was looking at [SA] eh..

*kayšuf f waHed eh.. Hufra kanet f ššežra*

he was looking at a hole [which] was in the tree

*m beed ... m beed xeržet elih eh.. yuka, mbeed xeržet elih yuka*

then .. then came out an owl, then came out an owl

*min Dar murah lga nnHel tabein eh..*

when he turned around he found (saw) the bees following

*žbar lqeTT tabe l eh.. žber nnHel tabein eh.. djru,*

he saw the cat following the eh .. he saw the bees following eh .. the dog

*m beed hreb, hreb itxebbee m eh... m el.. txabbæ men ..men yuka*

then he ran away, he ran away to hide from eh .. from eh.. he hid from the owl

*mea huwwa kayfetteš ela ggrana dyalu Tlee fuq waH elHežra šebber f eh.. f eh..*

he was looking for his frog he climbed on a rock, he caught a ... a ...

*qqrūn d waHed eh ... djdiy, djdiy d elghaba*

the horns of a eh ... deer, a wild deer

*temma m beed Tlee fuq eh fuq rras d dak djdiy*

then he climbed on top of the head of that deer

*bqa žari bih u djru tabe kayžri*

he went on running and the dog was following them running

*šwiyya u huwwa yemši l waHed eh ... d waHed eh..kudya u seyybu f elma f waHed eh...*

after a little while he went to a .. to a ... eh hill and he threw him into the water in a eh ...

*eh waHed gelta temma TaH.. u tfezzeg huwwa u eh.. djru u fdik eh..*

eh a pond he fell there ... and he got wet he and eh .. the dog in that eh

*f dik lgelta d elma žber waHed eh..*

in that pond of water he found a ...

*smee ši Sawt dyal ggrayen huwwa yetxabbae mur waHed ššežra u bqa kay ..kaytSannaT*

he heard a noise of frogs he hid himself behind a tree and was ... listening

*šwiyya u huwwa yTell elihum huwwa u djru dyalu*

after a little a while he ?? peeped on them together with his dog

*žbar grana w wladha*

he found a frog and its little ones

*men beed dda dak ggrana lli kanet lli kan meHraž fiha, u mša fHalu*

then he took that frog which was which he needed, and he left

K.K. (70, Oujda)

*waHed lxeTra hada waHed dderri u kelb, kan eendhum waHed lqerqra yak? waH lqerqra*  
 Once upon a time a boy and a dog had a frog ok? a frog  
*u ... min mšaw eh..neesu dik lqerqra herbet lhum m dik eh..dyaI..eh fin kanet*  
 and ... when they went ... to sleep that frog run away from that where it was  
*iwa min naDu u ma lqawhaš temma, mša lbes Hwayžu..mša lbes Hwayžu*  
 then when they got up they didn't find her there, he put on his clothes, he put on his clothes  
*u lkelb mša bqa ydewwer f dik lqerea fin kanet u HSel lu rasu temma*  
 and the dog was looking in that frog where it was and his head got stuck there  
*iwa u mšaw xeržu u ttherset lu dik eh..zzaža ..d...lkelb ttherset lu dik zzaža*  
 then they went out and that eh ... glass broke eh d .. the glass broke  
*faš kan daHi rasu*  
 where he (the dog) had stuck head  
*u mšaw l waHed lghaba, min mšaw l dik lghaba bqaw ieeyTu*  
 and they went to the woods, when they went to the woods they started calling  
*mšaw l waHed eh..eh..ttuqba fin kaykun eh..fin ka..eh..dik lfar*  
 they went to a eh .. eh.. a hole where there is a eh ... where there is ..eh that mouse  
*u bqaw i.. bqa ieeyTeT l dak lfar, xuržet lu dik lfar u bqat t..tzege elih*  
 they were .. he was calling that mouse, that mouse came out and was yelling at him  
*iwa u mša lkelb eh..mša l dik dyaI eh..fin kaykun dak nnHel, u TaHet dik eh..dik eh..*  
 then the dog eh .. went to that of eh .. where the bees are [live], and that eh .. fell .. that  
*TaHet fi ka..fi kaykun nnHel u dak šši, mša u mšaw fug waHed lferε ttæ waHed ššežra*  
 it fell where there are bees and that thing, he went and they went on top of a branch of a tree  
*u bqa yeeyTeT f waHed ttuqba, u mša u lkelb TeyyeH dik eh..dyaI nnHel*  
 and he was calling in a hole, and he went and the dog dropped eh .. that of the bees  
*u mšaw hežmu dak eh..duk nnHel mšaw hežmu ela dak lkelb, dderri mša Tlee fug waHed eh..*  
 and those eh .. those bees attacked the dog, the boy climbed on a ...  
*fug waHed lHežra u bqa yeeyTeT l eh.. bqa yeeyTeT l ha, u ža waHed eh.. waHed eh..*  
 on a rock and was calling the eh.. was calling her, and came a eh ... a eh...  
*waHed leghzala u Derbatu b grunha u..šeddatu fe grunha u bqaw i eh.. bqa.. bqaw ižriw,*  
 a deer and [she] hit him with her horns and ... she caught him with her horns and they were. ..  
 running  
*bqat tejri bih u TeyyHatu fug waHed lgelta, huwwa u waHed lkelb dyaIu*  
 she was running and dropped him on a pond, he and his dog  
*u bqaw isemeu eh..lHeDra dyaIha u min mšaw f..mur waHed eh waH..dik žžd..*  
 and they were hearing eh .. her voice (speech) and when they went behind a eh a .. that br ...  
*waHed žždeε ntaε ššežra TayHa u bqaw isemeu lhedra dyaIha u mšaw*  
 a branch of a lying tree lying and they were hearing her voice (speech), and they went  
*šafu mur dik žždeε u lqa.. lqaw huwwa u eh.. huwwa w mertu*  
 and looked behind that branch and they found .. found ...him and his wife  
*hadik hiyya w ddaw eh..ddaw ..ddaw dik lqerqra lli Daεet menhum, Safi,, w režeu ldarhum*  
 then they took eh they took .. took that frog which they had lost, that's it, and they went back home.



## Appendix 5

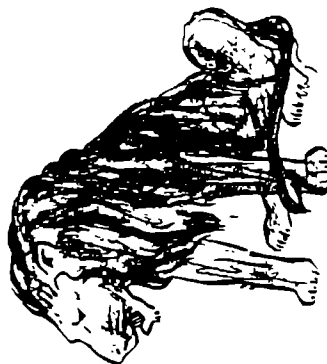
### A. List of sentences used in the perception task

Relativization Task

Name: .....

1. OVS OS *ddubb lli kayemseH lqerd kaymesH-u ssbee*  
The bear which is rubbing the monkey is being pinched by the lion
2. OVS SO *ddubb kaybus-u lqerd lli kaymesH-u ssbee*  
The bear is being kissed by the monkey which is being rubbed by the lion.
3. SVO OS *ssbee kayeDreb lqerd lli kayemseH ddubb*  
The lion is hitting the monkey which is rubbing the bear.
4. SVO OO *ddubb kayemseH ssbee lli kayDerb-u lqerd*  
The bear is pinching the lion which is being hit by the monkey.
5. OVS OO *lqerd lli kaybus-u ssbee kayDerb-u ddubb*  
The monkey which is being kissed by the lion is being hit by the bear.
6. OVS SS *lqerd kaymesH-u ssbee lli kaybus ddubb*  
The monkey is being rubbed by the lion which is kissing the bear.
7. SVO SO *ssbee lli kaybus-u lqerd kayeDreb ddubb*  
The lion which is being kissed by the monkey is hitting the bear.
8. OVS OO *ddubb lli kayqers-u lqerd kaymesH-u ssbee*  
The bear which is being pinched by the monkey is being rubbed by the lion.
9. SVO OS *lqerd kaymeseH ddubb lli kaybus ssbee*  
The monkey is patting the bear which is kissing the lion.
10. SVO SS *lqerd lli kayeDreb ddubb kaybus ssbee*  
The monkey which is hitting the bear is kissing the lion.
11. OVS SS *ssbee kayDerb-u ddubb lli kayeqres lqerd*  
The lion is being hit by the bear which is pinching the monkey.
12. OVS OS *ssbee lli kayeDreb ddubb kaybus-u lqerd*  
The lion which is hitting the bear is being kissed by the monkey.
13. SVO SS *ddubb lli kayemseH ssbee kayeqres lqerd*  
The bear which is rubbing the lion is pinching the monkey.
14. SVO OO *lqerd kaybus ddubb lli kayqers-u ssbee*  
The monkey is kissing the bear which is being pinched by the lion.
15. OVS SO *ssbee kayqers-u ddubb lli kayDerb-u lqerd*  
The lion is being pinched by the bear which is being hit by the monkey.
16. SVO SO *ddubb lli kaymesH-u ssbee kayeqres lqerd*  
The bear which is being rubbed by the lion is pinching the monkey.

**B. Picture used in the experiment**





# Samenvatting

## Taalverlies en taalverschuiving van het Marokkaans-Arabisch in Nederland.

Het onderzoek beoogt:

- enerzijds vast te stellen in hoeverre er sprake is van taalverlies en taalverschuiving bij de tweede generatie adolescenten met een Marokkaans-Arabisch achtergrond;
  - anderzijds door middel van cross-linguïstische vergelijking bij te dragen aan theorievorming met betrekking tot taalverlies en verschuiving op de diverse linguïstische niveaus.
- Het onderzoek werd uitgevoerd bij twee groepen informanten te weten een groep tweede-generatie jongeren (25) en een controlegroep eentaligen in Marokko (30).

Met behulp van de volgende instrumenten werd bij de beide groepen materiaal verzameld.

- (a) een vragenlijst, afgenomen bij alle informanten: de vragen betreffen de taalsituatie van de informant;
- (b) een zogenaamde Can-Do schaal afgenomen bij alle informanten: de informanten beoordelen op een vijfpuntsschaal hun eigen taalvaardigheid in beide talen, uitgesplitst naar specifieke deelvaardigheden.
- (c) een taak voor meervoudsvorming: men dient van 30 substantieven de meervoudsvorm te geven;
- (d) een 'cue-validity' taak: in 81 zinnen waarin de kenmerken overeenkomst in getal, levendheid, contrastief accent en woordvolgorde systematisch gevarieerd zijn, dient men de agens te identificeren (c.q. van twee afbeeldingen de juiste aan te wijzen);
- (e) een klankonderscheidingstaak, afgenomen bij de twee groepen Marokkaans-Arabisch informanten en een controlegroep Nederlandse studenten (12): de informanten krijgen paren syllaben (48 paren in totaal) te horen waarvan de helft op één fonologisch kenmerk verschilt en moeten aangeven of de paren wel of niet verschillen;
- (f) een relativisatietaak: het betreft 16 zinnen van het type 'de aap die de beer kust, aait de leeuw.' De informanten werd gevraagd op een afbeelding de beide relaties waarvan sprake is in de zin ('wie doet iets bij wie') aan te wijzen;
- (g) een verteltaak; hierbij wordt gebruik gemaakt van het stripverhaal Frog: Where Are You?

In het eerste hoofdstuk wordt de theoretische achtergrond van het onderzoek op het gebied van taalverschuiving en taalverlies beschreven. De sociolinguistische profielen van de proefpersonen zijn in hoofdstuk 2 gepresenteerd, samen met een inleiding over de situatie van het Marokkaans Arabisch in Marokko en in Nederland.

Hieruit blijkt onder andere dat de meeste informanten meer Nederlands gebruiken dan Marokkaans-Arabisch in hun dagelijks leven, en ook hun taalvaardigheid in het Nederlands hoger inschatten.

De resultaten van de test voor meervoudsvorming in hoofdstuk 3 laten overduidelijk zien dat veel informanten verlies van kennis van de regels voor meervoudsvorming vertonen. Er zijn verschillende interessante overgeneralisatiestrategieën aan te wijzen. Daarnaast zijn de verschillen tussen de proefpersonen veel groter dan binnen de controlegroep.

Analyses van de resultaten van het cue-validity experiment in hoofdstuk 4 laten zien dat de cues 'levend/niet-levend', woordvolgorde en overeenkomst in getal tussen naamwoord en persoonsvorm een rol spelen bij verschillen in zinsinterpretatie binnen de twee groepen Marokkaanse adolescenten. Uit het gedrag van de experimentele groep blijkt dat er hier sprake is van invloed van de Nederlandse taal op het Marokkaans-Arabisch. Bovendien is het duidelijk geworden dat de experimentele groep gebruik maakt van een algemene strategie het eerste naamwoord als agens te zien. Bij de controlegroep bleek dat 'levendheid' een grotere rol speelt in de taak van agens-identificatie.

Hoofdstuk 5 bevat een beschrijving van de klankonderscheidingstaak en een overzicht van fonologische kenmerken van taalverlies door middel van een analyse van semi-spontane data. De resultaten laten zien dat er geen sprake is van een verschil tussen de beide groepen met betrekking tot het onderscheiden van klanken. Aan de andere kant zijn er bij de semi-spontane data wel verschillen de groepen. Bij de groep in Nederland zijn er aanwijzingen dat sommige Marokkaans Arabische klanken die niet voorkomen in het Ned vervangen worden.

In Hoofdstuk 6 wordt ingegaan op de interpretatie van de relatieve- zinnentaak en de verschillen die daarbij optreden tussen de twee groepen informanten. Uit de analyse bleek dat er, wat betreft woordvolgorde, geen verschil was tussen de hoogte van de correct scores in de controlegroep en in de experimentele groep; beide groepen vonden zinnen met een SVO woordvolgorde gemakkelijker te begrijpen dan zinnen met een OVS woordvolgorde. Er was echter wel een verschil wat betreft zinstypen. De experimentele groep vond zinnen waarin het hoofd van de relatieve zin het subject was in hoewel de hoofdzin als in de bijzin het makkelijkst te interpreteren. Voor de controlegroep waren dat zinnen waarin het hoofd van de relatieve zin het object was in de hoofdzin en het subject in de bijzin. Wat betreft het gebruik van relatieve zinnen in de spontane data bleek de controlegroep produktiever dan de experimentele groep.

In Hoofdstuk 7 wordt een korte samenvatting van de belangrijkste conclusies gegeven. In het onderzoek werden kenmerken van taalverlies en taalverschuiving aangetoond, maar het proces is nog niet afgelopen. Verwacht wordt dat er bij toekomstige generaties met meer zekerheid kan gesproken worden over de fenomenen taalverlies en taalverschuiving. Daarom worden er voorstellen gedaan voor verdere onderzoeksmogelijkheden op dit gebied.



## **Curriculum Vitae**

Abderrahman El Aissati was born in 1960 in Midar (Morocco). In 1982 he received his B.A. in English language and literature at Mohamed Ben Abdellah University in Fes. He taught English at Mohamed V University in Rabat for one year before following an intense two-year course of linguistic studies for which he received his Certificate of Higher University Studies (C.E.U.S). In 1989 he received his M.A. from the same university for his thesis on the phonology of Berber. From 1986 to 1990 he taught English at the University of Kenitra. In 1990 he came to the Netherlands on a research grant from the NUFFIC foundation. In 1991 he began work as an AIO on the project that is reported on in this dissertation.



